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	<p>Engineering and Design  ESTABLISHING AND MAINTAINING INSTITUTIONAL CONTROLS FOR ORDNANCE AND EXPLOSIVES (OE) PROJECTS</p>	
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**US Army Corps  
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15 December 2000

ENGINEERING AND DESIGN

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**ESTABLISHING AND MAINTAINING  
INSTITUTIONAL CONTROLS FOR  
ORDNANCE AND EXPLOSIVES (OE)  
PROJECTS**

**ENGINEER PAMPHLET**

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DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
Washington, DC 20314-1000

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Engineering and Design  
ESTABLISHING AND MAINTAINING INSTITUTIONAL CONTROLS FOR  
ORDNANCE AND EXPLOSIVES (OE) PROJECTS

1. Purpose. This pamphlet provides U.S. Army Corps of Engineers (USACE) personnel and their contractors with general guidance on the process to be used to develop, implement, and maintain institutional controls on Ordnance and Explosives (OE) project sites.
2. Applicability. This pamphlet applies to all Headquarters, USACE (HQUSACE) elements and all USACE commands having responsibility for performing OE response activities.
3. Distribution Statement. Approved for public release; distribution is unlimited.
4. References. Required and related references are at Appendix A.
5. Explanation of Abbreviations and Terms. Abbreviations/acronyms and special terms used in this pamphlet are explained in the glossary.

FOR THE COMMANDER:

10 Appendices  
(See Table of Contents)

  
ROBERT L. DAVIS  
Colonel, Corps of Engineers  
Chief of Staff

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## CHAPTER 1 GENERAL

### 1-1. Introduction.

a. The OE response process is designed to enhance public safety and protect the human environment from OE remaining from past DOD operations. The typical strategies for addressing the presence of OE on a site are physical removals and institutional controls. Although physical removals are conducted to reduce the amount of OE at a site, current technologies are not adequate to provide for the detection and removal of all ordnance. Therefore, institutional controls are implemented to manage residual risk remaining at an OE site. Institutional controls are also sometimes put into place without a physical removal, as a stand-alone response.

b. Risk from OE can be managed if the public is informed about the hazards, is willing to take reasonable precautions, and is willing to alter their behaviors. This document will focus on how institutional controls may be used to successfully manage OE risk. This document will emphasize the importance of encouraging meaningful stakeholder participation, supporting community needs and fostering long-term community commitment during the development, implementation and maintenance of institutional controls.

1-2. Policy. The policy of the USACE is to establish and maintain institutional controls in a manner which fully meet customers' expectations of quality, timeliness, and cost effectiveness within the bounds of legal responsibility. An acceptable level of quality does not imply perfection; however, there should be no compromise of functional, health, or safety requirements. Adherence to the Quality Management principles outlined in Engineer Regulation (ER) 5-1-11, Program and Project Management and ER 1110-1-12, Quality Management, will contribute to achieving this goal. OE response procedures must be formulated to ensure harmony with the USACE Strategic Vision and should be executed in concert with activities presented in other USACE guidance.

### 1-3. Regulatory Authorities.

a. Major Subordinate Commands (MSC), district commands, OE Design Centers, and the OE Mandatory Center of Expertise (MCX) will comply with all applicable laws and regulations. The district, which serves as the Project Manager (PM), will provide general legal services. For Formerly Used Defense Sites (FUDS) projects, the determination of the laws and regulations governing environmental aspects for any specific OE project will be made in consultation with the OC supporting the OE MCX. In the event of any sort of dispute with a regulator over the governing laws on a FUDS project, the district providing general legal services will represent the agency in negotiations or adversary

proceedings. For non-FUDS projects performed by the USACE under a different program or authority (i.e., Base Realignment and Closure [BRAC], Installation Restoration [IR], Work for Others), the appropriate legal representative of the sponsoring agency will be the lead counsel for all legal matters, although USACE counsel will be available for consultation.

b. OE response actions will be executed in compliance with the OE requirements of Department of Defense (DOD) 6055.9-STD; Army Regulation (AR) 385-61; AR 385-64; Department of the Army Pamphlet (DA Pam) 385-61; Headquarters, Department of the Army (HQDA) LTR 385-98-1 "Explosives Safety Policy for Real Property Containing Conventional Ordnance and Explosives"; ER 1110-1-8153 "Ordnance and Explosives Response"; "Safety and Health Requirements for Ordnance and Explosives Response Actions" to be published in ER 385-1-95; and any other applicable OE publications listed at Appendix A. All USACE elements will comply with DOD and DA safety and health regulations and procedures.

c. The regulatory authorities governing the establishment and maintenance of institutional controls during OE response actions include: Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); National Oil and Hazardous Substance Contingency Plan (NCP); Defense Environmental Restoration Program (DERP); BRAC; Resource Conservation and Recovery Act (RCRA); and 40 CFR Part 260 et al - Military Munitions Rule. These regulatory authorities are discussed in detail in Engineer Pamphlet (EP) 1110-1-18, Ordnance and Explosives Response. Since the BRAC process has dealt with issues of transferring or leasing land that may contain residual OE contamination, Appendix B provides a general overview of the BRAC process. It is necessary to have a basic understanding of this process in order to understand the scope of institutional controls that may be used at transferring or transferred military properties.

1-4. Responsibilities. It is the responsibility of all USACE personnel involved with the OE Program to safely execute OE response projects and to comply with applicable laws, regulations, and policies. A detailed discussion of USACE organizational responsibilities for OE response projects is presented in Engineer Regulation (ER) 1110-1-8153, Ordnance and Explosives Response.

1-5. Functional Roles. The following section provides a description of the functional roles for USACE elements regarding the establishment and maintenance of institutional controls during OE response projects. A more comprehensive description of the functional roles for the organizations during OE response projects discussed below is provided in ER 1110-1-8153.

a. Headquarters, US Army Corps of Engineers. HQUSACE is responsible for monitoring the Engineering Evaluation and Cost Analysis (EE/CA) report, a component of which is the Institutional Control Plan. In the Institutional Control Plan, the establishment and maintenance of institutional controls for a specific site are discussed.

b. Major Subordinate Commands. In addition to the requirements stated in ER 1110-1-8153, MSCs will perform the below listed functions pertaining to the establishment of institutional controls. These responsibilities may be delegated to assigned districts within a MSC's geographic area.

- (1) Establish contact with zoning and permitting authorities;
- (2) Coordinate with local authorities; and
- (3) Coordinate maintenance inspections, including recurring reviews.

c. District. A district will perform those activities for institutional controls that are delegated to it by the MSC.

d. OE Design Center. The OE Design Center will provide direct support to the MSCs and districts, as requested, for establishing and maintaining institutional controls.

e. OE MCX. The OE MCX will:

(1) Review and provide comments and written concurrence or non-concurrence on products related to institutional controls (e.g., Statement of Work, Work Plan, and Institutional Analysis, Institutional Controls Plan) to ensure compliance with Federal, DOD, DA and USACE OE safety and OE environmental regulations.

(2) Provide technical support to any USACE office conducting institutional controls activities in areas where unexploded ordnance (UXO) is suspected or known to exist.

f. State, Local, and/or Tribal Governments/Authorities. State, local, and/or tribal governments/authorities are critical to the development and selection of site-specific institutional controls in concert with USACE.

g. Regulators. Regulators provide advice and assistance to the USACE and state, local, and/or tribal governments in the development of a viable institutional control program for a particular site. Once an institutional control alternative has been selected for a site, regulators will provide oversight to ensure continued compliance with the institutional control.

h. Landowners. Landowners provide critical input into the development of a viable institutional control program for their property. If an institutional control program is selected for their property, the property owner will maintain compliance with the provisions of the institutional control and notify the USACE and the appropriate, state, local, and/or tribal government with any proposed land use changes for the site that may impact the effectiveness of the institutional control.

## CHAPTER 2 OVERVIEW OF INSTITUTIONAL CONTROLS

2-1. Introduction. Institutional controls are mechanisms which protect property owners and the public from hazards contained on a site by limiting the access or use of a property, or by warning of the hazard. Institutional controls are substantially the same as “land use controls,” as defined in the Department of Defense’s Interim Policy on Land Use Controls Associated with Environmental Restoration Activities (31 August 2000). This chapter discusses the three general types of institutional controls: legal mechanisms, engineering controls, and educational programs. Specific examples of these types of institutional controls are presented in Appendix C. This chapter also discusses some of the strengths and limitations of these institutional controls, as well as their applications.

### 2-2. Legal Mechanisms.

a. This section provides an overview of the effectiveness of legal mechanisms. Specific legal approaches including easements, restrictive covenants, reversionary interests, zoning, permitting, siting restrictions, and overlay zoning have been used for many purposes other than limiting exposure to environmental risks such as OE, and are described in detail in Appendix C.

b. Legal mechanisms are particularly effective types of institutional controls because:

(1) Other than periodic monitoring necessary for enforcement, legal mechanisms do not require the physical maintenance that is necessary for other types of institutional controls, such as engineering controls.

(2) Title recording systems, local planning commissions, and other administrative systems and associated staff already exist in most jurisdictions and can be used to implement a legal mechanism as part of an institutional control program. Additional funding may be required for the administering agency depending on the extent of additional effort required due to the implementation of an institutional control program at a site within their jurisdiction.

c. Legal mechanisms require constant oversight and support in order to remain effective. Administrative programs to implement and enforce legal mechanisms are already in place; however, they are sometimes not effective in protecting against inappropriate land use and should be used in conjunction with other programs.

2-3. Engineering Controls.

a. This document also considers engineering controls. Engineering controls either limit the public's access to a site or limit the public's exposure to the residual contamination that remains on a site to an acceptable level. Engineering controls can take on many forms and are often developed to meet the specific conditions of a site. Engineering controls are most effective when implemented in concert with other institutional controls, rather than as stand-alone mechanisms.

b. When using engineering controls to limit the public's exposure to contaminants, the current land use of the area around the contaminated site must be considered. For example, if the property is surrounded by residential areas, schools, or playgrounds, or if the property is frequented by the public, the potential for exposure and adverse consequences is increased and therefore a higher level of access control would be necessary. Examples of engineering controls that have historically been effective in limiting access are fences, signs, and soil caps. Appendix C provides information on the strengths and limitations of these types of engineering controls.

c. Engineering controls protect against inadvertent access or exposure to the hazards associated with a site. They have the advantage of being passive, i.e., once they are in place they do not require human interaction to provide notice or protection (other than to maintain the integrity of the control). Another advantage of engineering controls is that they provide a direct deterrent to those who are the most likely to come into contact with a contaminated area by either limiting access or providing a warning as to the nature of the dangers posed by a contaminated site. Engineering controls are an important part of institutional control programs in areas where it is particularly important to protect against inadvertent access, such as in areas where it can be expected that children will be in the vicinity. Engineering controls require routine inspection and maintenance in order to remain effective.

2-4. Educational Controls.

a. The use of educational controls is usually a good strategy to manage and reduce residual risk from public exposure to OE. An education program may take on many forms and may be easily tailored to meet the specific needs of a site and the surrounding community. Examples of education programs include formal education seminars and public notices.

b. Educating the local community is an extremely important part of any institutional control program. Generally, if people are aware of and understand the hazards associated with an OE-contaminated site, they will take the necessary precautions to avoid exposure. Education programs can be tailored to meet the specific needs of a particular audience (e.g., local homeowners, school children, regulators, developers, etc.) and can be performed as often as necessary to educate those that are at greatest risk for exposure to OE. Educational efforts constitute a stand-alone institutional control, but

can also improve the effectiveness of other controls that are part of the overall program. Appendix C provides additional information on the strengths and limitations of education controls.

### CHAPTER 3 ESTABLISHING AN INSTITUTIONAL CONTROL PROGRAM

3-1. Introduction. The establishment of an institutional control program is an important component of a comprehensive risk management strategy for an OE contaminated property. This chapter will discuss how institutional controls fit into the risk management approach and thereby, provide a level of protection for the local community from OE hazards. This chapter will also discuss how local stakeholder involvement is crucial to the establishment of a successful institutional control program.

3-2. Risk Management. Risk management is used by the government when OE risk remains at a site. The risk management approach is designed to encourage meaningful stakeholder participation, foster long-term community commitment to the institutional control program, and provide government support for community needs. Risk Management consists of:

a. Risk Minimization Consistent with Community Needs. This component of risk management focuses on minimizing the physical OE threat by removing as much of the ordnance as is practical considering the needs of the community. This process occurs during the EE/CA and removal action phases of the OE response process. Consideration should also be given to the possibility of engineering controls, such as caps or other barrier-like structures to directly minimize the existing hazards. Frequently, maintenance is required to ensure effectiveness of any risk minimization strategy that is selected.

b. Residual Risk Management. Managing the residual risk by encouraging local initiatives is the essence of institutional control planning. The local community is encouraged to become actively involved in developing local initiatives to implement institutional controls. Local initiatives are institutional controls for which the local authorities agree to support and provide long-term enforcement. The federal government does not have the authority to enforce local initiatives; however, it can encourage the local community and pledge its support to provide leadership, expertise, resources and a continuing long-term review of the implemented institutional control program.

c. Recurring Review. Monitoring the effectiveness of all elements of the implemented project is the basic nature of recurring review. At a minimum all projects must be reviewed every five years. The frequency of review must be a design element that is site-specific. The recurring review elements are a clear indication that the federal government provides a long-term commitment to managing residual risk at sites contaminated by OE. Recurring review provides the opportunity to respond to problems that develop over time, renew the communities understanding of the ordnance problem, refresh commitments necessary to effectively protect the communities from ordnance hazards, re-evaluate the effectiveness of the institutional control program, and to ensure productive use of the land resources.

3-3. Developing Site-Specific Objectives. To effectively manage long-term residual risk at an OE site, the government needs to encourage meaningful stakeholder involvement. Coordination with local officials and other stakeholders is essential to identifying site-specific objectives for the institutional control program. This coordination involves listening to community officials about their form of government, discovering what local programs exist, and uncovering the community's needs for addressing the ordnance problem. This section discusses the steps required to establish site-specific objectives. Table 3.1 summarizes these steps.

<b>Table 3.1</b> Steps Required to Establish Site-Specific Objectives
<ul style="list-style-type: none"><li>• Determine the problems requiring change.<ul style="list-style-type: none"><li>- Site history</li><li>- Types of activities</li><li>- Types and quantities of munitions</li><li>- Current and future land use</li></ul></li><li>• Identify types of reuse allowed.</li><li>• Determine the type of activities to be restricted.</li><li>• Determine site-specific restrictions.</li></ul>

3-4. Determine the Problems Requiring Change. The first step in establishing site-specific objectives is to identify the specific problems associated with OE at the site. To do this, both the historical use of the site and current/future land uses should be evaluated.

a. The history of the site should be reviewed to evaluate the type(s) of activities that occurred at the site, as well as the type(s) and quantity(ies) of munitions used.

(1) Type of activities. Activities that may result in the presence of OE include: ammunition plants; storage, test, impact, and training areas; and bombing or target ranges. These different uses will result in differing distributions of OE, both horizontally and vertically.

(2) Type and quantity of munitions. The type and quantity of munitions used at a site may have varied over the life of the site, depending on changing missions and technology. One site may therefore include numerous types of munitions. OE may include bombs, artillery, mortar, aircraft cannon or tank-fired projectiles, dispensed munitions, submunitions, rockets, guided missiles, grenades, general demolition materials, bulk explosives, pyrotechnics, torpedoes, mines, small arms ammunition, and chemical/biological munitions. In addition to the differing types of munitions, it must also be determined

whether chemical agents were used at a site. In the case of chemical rounds, the propellants, explosives and pyrotechnics (PEP) as well as the chemical agent fillers included in munitions may pose a hazard. Just as with the types of activities, the horizontal and vertical distribution of OE will vary for differing types of munitions.

b. Current and Future Land Use. The current land use and reasonably anticipated future land use of the property and surrounding area should be considered when developing the specific objectives for a site. This information will aid in identifying the particular risks of exposure to OE at the site. For example, the risk to be controlled will vary depending on whether the site is currently developed or undeveloped and whether it is located in a sparsely populated or densely populated area. Consultation with local government agencies and the local citizenry will help reveal reasonably anticipated future use. The following information and resources may be helpful in evaluating the current and future land use:

- (1) Zoning laws;
- (2) Zoning maps;
- (3) Comprehensive community master plans;
- (4) Population growth patterns and projections (e.g., Bureau of Census projections);
- (5) Accessibility of site to existing infrastructure (e.g., transportation and public utilities);
- (6) Institutional controls currently in place;
- (7) Site location in relation to urban, residential, commercial, industrial, agricultural and recreational areas;
- (8) Federal/state land use designation (e.g., national parks, state recreational areas, governmental facilities providing extensive site access restrictions, such as DOD facilities);
- (9) Historical or recent development patterns;
- (10) Cultural factors (e.g., historical sites, Native American religious sites);
- (11) Natural resources information;
- (12) Environmental justice issues;
- (13) Location of on-site or nearby wetlands;

- (14) Proximity of site to a floodplain;
- (15) Proximity of site to critical habitats of endangered or threatened species; and
- (16) Geographic and geologic information.

3-5. Identify the Type(s) of Reuse Planned. The types of reuse planned at a site may be stated in broad categories such as residential, commercial, industrial, recreational, agricultural, etc. Depending on site-specific characteristics, it may be more effective to be more specific than these broad categories. The historical use of the site and the clearance depth used for any previous cleanup activities should be considered when identifying the types of reuse planned.

3-6. Determine the Type(s) of Activities to be Restricted. In addition to addressing the types of appropriate reuse of an OE-contaminated site, it may be necessary to also address specific activities that are not planned. This may include prohibitions or restrictions on excavation, drilling, or disturbance of soil. A restriction on excavation or drilling, for example, may require an OE clearance prior to any field activities.

3-7. Determine Site-Specific Requirements. Site-specific restrictions may be developed based on the nature and extent of the OE contamination, the current and proposed future land use, and the nature of activities performed in the area. Site-specific restrictions may also be developed based on special characteristics of the surrounding area. For example, several other programs exist that use institutional controls to address site-specific characteristics requiring special restrictions. Appendix D includes a description of several programs that, in addition to being examples of institutional control programs, may also provide additional avenues to restrict future use at OE-contaminated sites. For example, development of an OE site that encompasses wetland areas may be restricted by wetlands regulations as well as by an institutional control program designed specifically to address the OE contamination.

3-8. Checklist for Establishing Site-Specific Objectives. Appendix E contains a checklist addressing issues related to establishing site-specific objectives in an institutional control program. The district's real estate division is another resource for additional examples of site-specific objectives that may be applicable to a site.

## CHAPTER 4 DEVELOPMENT OF AN INSTITUTIONAL CONTROL PROGRAM

4-1. Introduction. Once site-specific objectives have been identified, the government and local community may use a variety of tools to aid in the development of an institutional control program. The first tool, institutional analysis, should be conducted at any site where an institutional control program is being considered. The other tools, a land use matrix and a land use classification scheme, can be helpful but their use is not required.

### 4-2. Institutional Analysis.

#### a. Overview.

(1) The institutional analysis is conducted during the EE/CA process. The institutional analysis process provides the opportunity to collect basic data to support an institutional control program. The objectives of the institutional analysis are to illustrate the opportunities that exist to implement an institutional control program at a specific site; identify government agencies having jurisdiction over OE contaminated lands; and assess the appropriateness, capability and willingness of government agencies to assert their control over OE contaminated lands.

(2) An institutional control program may consist of a single institutional control or a combination of strategies. The local community and stakeholders drive the development of the appropriate institutional control alternatives. The alternatives for the site should reflect the framework of the local institutions and the needs of the community. Therefore, the product of the institutional controls analysis should be the selection of the institutional control that is supported by the community and reflects the site-specific objects identified at the beginning of the project.

#### b. Assessment of Institutions.

(1) Local and state government agencies and other organizations can assist in the development, implementation and/or maintenance of the institutional control program. There are five elements to consider when assessing the ability of a local, state, Federal, or private agency to assist in the implementation or monitoring of a proposed institutional control program. The five elements are listed in Table 4.1 and discussed in the following paragraphs.

<b>Table 4.1</b> Five Elements of an Institutional Analysis
<ul style="list-style-type: none"><li>• Jurisdiction of the Agency</li><li>• Authority Exercised by the Agency within its Jurisdiction</li><li>• Mission of the Agency</li><li>• Capability of the Agency</li><li>• Desire of the Agency to Participate in the Institutional Control Program</li></ul>

(a) Jurisdiction of the Agency. Federal, state, and/or local government agencies may have jurisdiction within the area of a project site. The laws governing the existence of the specific agency will convey this jurisdiction. Tribal governments and commissions may also have jurisdiction within certain areas. Determining which agency within the various levels of government has the appropriate jurisdiction for a specific site may prove challenging. In some areas, several agencies may be involved, depending on the type of institutional control or what specific aspect of an institutional control is being contemplated. Private agencies do not usually have any jurisdictional authority.

(b) Authority Exercised by a Government Agency within its Jurisdiction. Key questions that must be asked regarding the authority exercised by a government agency are listed below. Private agencies usually do not have any enforcement authority other than those provided by normal trespass laws.

- What are the limits of the agency's authority?
- What is the origin of the agency's authority?
- How much control is exercised by the agency?
- Does the agency have enforcement authority?

(c) Mission of the Agency. The specific mission of the agency is critical to its ability to implement, enforce, or maintain an institutional control program. Two critical missions for the USACE in OE response are public safety and land use control. If USACE can find a similar mission at another government or private agency, there is reasonable potential that a cooperative institutional control program can be implemented.

(d) Capability of the Agency. Even if an agency has the jurisdiction, authority, and mission to be involved in an institutional control program, if it does not have the capability, it cannot be an effective partner. In the case of local government agencies, the capabilities may be unique and are often a reflection of the desires of the local community. The capabilities of a government or private agency can be augmented, however, with additional funding in order to implement the additional requirements of the proposed institutional control program.

(e) Desire of the Agency to Participate in the Institutional Control Program. The desire of a particular government or private agency to participate in an institutional control program is absolutely critical to its success. The Federal Government must encourage the participation of a local agency in the implementation of an institutional control program. If local officials are convinced that participation in an institutional control program is in their best interests, USACE will have little difficulty in persuading them that they should participate. Resources in the form of funding for the agency's implementation costs may overcome the initial hesitancy to become involved.

(2) The basic data necessary to determine the jurisdiction, authority, mission, capabilities and desire of government or private agencies to assist in the implementation or maintenance of an institutional control program may be collected through a series of interviews with key personnel within the identified agencies. The interviews should be conducted through personal contacts. The data can be collected and collated to ensure complete coverage of all of the potential agencies. Appendix F includes a sample institutional analysis summary format. This information can then be summarized to determine which agencies can best assist in the institutional control program and to develop basic plans of action. Sensitivity to local concerns and some creativity will be required in developing a complete institutional control program for a site.

c. Determination of Any Land Restrictions. While performing the institutional analysis, it is necessary to determine the existence of any current deed restrictions or other type of institutional control that may have been placed on the property in the past as a result of some other activity. If such restrictions are found to already exist at a site, it may be easier to modify the existing restriction to address the OE risk than to implement an entirely new institutional control. A complete and thorough records search of the property must be performed in order to determine if any current restrictions exist. Local title search firms may be used to perform this function, as they are often the most knowledgeable about the best repositories of local property records.

d. Institutional Analysis Report. Upon completion of the data collection, the results of the study must be documented in an Institutional Analysis Report. The report may either be prepared as a stand-alone document or as an appendix to the overall site characterization report (e.g., EE/CA Report). The Institutional Analysis Report should include the following sections:

- (1) Purpose of the Study;
- (2) Methodology;
- (3) Scope of Effort;
- (4) Selection Criteria (Jurisdiction, Authority, Mission);
- (5) Acceptance of Joint Responsibility (desire to participate in the institutional control program);
- (6) Technical Capability;
- (7) Intergovernmental Relationships;
- (8) Stability;
- (9) Funding Sources; and
- (10) Recommendations.

#### 4-3. Other Tools to Aid in the Development of an Institutional Control Program.

a. Land Use Matrix. The Future Land Use Working Group has developed a land use matrix tool to aid in identifying and resolving complex issues related to restoration and reuse of contaminated sites. This tool has been developed to aid in building consensus among various stakeholders regarding the need for and level of institutional controls at a contaminated site. While the land use matrix was developed specifically for BRAC sites, it can also be used at any site where institutional controls are being proposed. By laying out the potential alternatives in matrix form, all parties can see the cost, benefit, and potential results of combinations of various remedial and institutional control alternatives. Table 4.2 lists the six elements of the basic matrix, which may be adapted to address site-specific conditions.

b. Land Use Classification Schemes. Another tool that is available to help define the level and extent of institutional controls is a land use classification scheme. A land use classification scheme identifies areas that are contaminated with OE and places use restrictions on those areas in accordance with the level of OE contamination. In addition to being a tool in the development of an institutional control plan, once a land use classification scheme has been developed it may also become a part of the program.

<p>Table 4.2 Basic Elements of the Land Use Matrix</p>	
Element 1: Remedy Alternatives	All potential methods for cleanup being considered at a site are referred to as remedy alternatives. All alternatives included in the matrix should meet both engineering and legal requirements.
Element 2: Cost	The cost of each remedy alternative should be estimated. The cost should include all aspects of the alternative, including construction, short and long-term monitoring, and operation and maintenance.
Element 3: Time until available for reuse.	The time available for reuse accounts for the time it will take to prepare the property for reuse, including the time required for preparation to lease or transfer by deed.
Element 4: Restrictions on Use	Any restrictions on use of the property after meeting the remedial action objectives should be listed and a description of the proposed institutional controls included.
Element 5: Alternatives for Reuse	Reuse alternatives may be general or specific. General categories include residential, educational, commercial, office, industrial, recreational, aviation, or open space. More specific reuse alternatives may be necessary depending on the nature of the risk posed by OE at the site.
Element 6: Potential for reuse at completion of the remedy	<p>The matrix uses three codes to differentiate among the potential for reuse. These codes include:</p> <ul style="list-style-type: none"> <li>★ Indicates that the site or a portion of the site is not feasible for a particular reuse because of the identified remedy.</li> <li>⊖ Indicates that there are some restrictions on a particular reuse of the site or a portion of the site for the identified remedy.</li> <li>☒ Indicates that there are no restrictions on a particular reuse of the site or portion of the site for the identified remedy.</li> </ul>

**CHAPTER 5**  
**PRINCIPLES OF AN INSTITUTIONAL CONTROL PROGRAM**

5-1. Introduction.

a. This chapter discusses the principles to consider when developing an institutional control program. These items are described as principles because they apply uniformly to the development of all institutional control programs. These principles are featured in Table 5.1 and discussed in the following paragraphs.

<b>Table 5.1</b> Principles for Developing an Institutional Control Program
<ul style="list-style-type: none"><li>• An institutional control program is always appropriate on any site contaminated with OE.</li><li>• All parties with interest in the property must be involved in the process.</li><li>• Notice in various forms is useful in protecting communities from the harmful effects of misuse of OE contaminated lands.</li><li>• Every institutional control program must have an assurance strategy that is developed along with the basic plan.</li><li>• Multiple levels of control and layers are desirable for any institutional control program.</li><li>• Records are necessary to evaluate the continued effectiveness of the institutional control program during recurring review.</li><li>• The federal government should pay for separable costs of Institutional Controls if they are an expansion of normal responsibilities of local agencies.</li></ul>

5-2. An Institutional Control Program Is Always Appropriate On Any Site Contaminated With OE. When physical OE removal is conducted, the use of best technology, professional oversight and the epitome of quality assurance does not provide for the detection of all ordnance on the site. Therefore, the application of institutional controls is an appropriate mechanism to keep the public safe from OE hazards. The success of the institutional control program is based on the attitudes of the local institutions and community. Trust, commitment and responsibility must be communicated and accepted by all stakeholders and the Federal Government.

5-3. All Parties With Interest In The Property Must Be Involved In The Process. The foundation of an institutional control program is meaningful stakeholder involvement. Active involvement of the local officials and community is paramount to the development of local initiatives that will be supported and successfully implemented.

5-4. Notice In Various Forms Is Useful In Protecting Communities. The local institutions should make the decision regarding the type and extent of public notification. While notice is always beneficial for safety consideration, global community notice may alarm the public and have detrimental impacts. For example, property values may be adversely affected. Therefore, it is important for local officials to target only those groups impacted by OE decisions. For example, notice may be provided during the issuance of building permits to inform those individuals most likely to be effected (i.e., those engaged in excavation activities).

5-5. Every Institutional Control Program Must Have An Assurance Strategy. Because of safety issues inherent on an OE site, an assurance strategy is an important consideration during institutional controls planning. Forms of assurance include recognition of responsibilities at all levels of government and private citizens, state oversight, frequent communication, recurring review, elements of the maintenance requirements and a fastidious attitude toward keeping commitments at the Federal level. Only community action in the largest sense can determine adequate assurance.

5-6. Multiple Levels Of Control And Layers Are Desirable For Any Institutional Control Program. Designing layering or redundancy into an institutional control program will maximize the strengths of the individual controls while minimizing their limitations. Multiple levels of institutional controls help target different "at risk populations" and add to the stability of the system. For example, children that go to school near ordnance contaminated lands should be approached differently than construction workers who excavate for utilities. School programs and informing parents are essential in the former group and it may be more effective to issue a construction permit subject to elements of a safety plan based on the site-specific ordnance contamination to the construction company. Violation of the excavation safety plan developed during the removal project may result in voiding the construction permit. Delays, fines and penalties may provide sufficient incentive for compliance under those conditions. In general, we should avoid redundant regulations. Oversight, quality assurance and recurring review may add safety benefits.

5-7. Records Are Necessary To Evaluate The Continuing Effectiveness Of The Institutional Control Program During Recurring Review. Records must be maintained so the recurring review may assess the continuing commitment at all levels within the community. Any opportunity for enforcement must include records of implementation of the controls agreed upon during the project planning.

5-8. The Federal Government Should Pay Separable Costs Of Institutional Controls If They Are An Expansion Of Normal Responsibilities Of Local Agencies. Much of the proposed efforts under institutional controls is mandated by state and local law. If services required in the institutional control program are provided for under state or local funding, then the Federal Government is usually not obligated to fund these services.

**CHAPTER 6**  
**THE ESTABLISHMENT, IMPLEMENTATION AND TERMINATION**  
**OF INSTITUTIONAL CONTROLS**

6-1. Introduction. This chapter discusses the requirements for establishing, implementing and terminating an institutional control program at an OE site.

6-2. Establishing Institutional Controls.

a. The following issues should be considered when establishing an institutional control program: preparation of an institutional control plan; preparation of support agreements; establishment of funding for the implementation and maintenance of the institutional control program; and provision of an appropriate level of public notice regarding the establishment of the institutional control program.

b. Preparing an Institutional Control Plan.

(1) An institutional control plan should be prepared when an institutional control program is being formulated for a site. The institutional control plan is normally prepared during the EE/CA process. The plan should be a brief summary of the major issues and objectives that the institutional controls have been designed to address. Issues covered in the plan should include:

(a) General description of site boundaries;

(b) Specific institutional controls that will be used on the site;

(c) How the proposed institutional controls will reduce the risk of OE exposure;

(d) What local, state, Federal Government, or private agencies, or individuals are involved in the implementation, administration, enforcement, and/or maintenance of the institutional controls;

(e) Identification of short-term and long-term costs and funding sources;

(f) Schedule for implementation and inspection of the institutional controls;

(g) How long the institutional controls will have to remain in place; and

(h) Procedures for modification or termination of the institutional controls.

(2) The institutional control plan should be reviewed by all parties that will be involved in implementing or maintaining the institutional controls. It is important that all parties with approval

authority be included in the review process. In addition, local community groups and outside state agencies that may not be directly involved in the institutional control program, but may have an interest in the program, should also be copied on the final plan.

c. Preparing Support Agreements.

(1) Detailed support agreements are an essential part of an effective institutional control program. Upon completion of the institutional control plan, specific support agreements should be prepared between USACE and the respective supporting agencies that will be involved in the implementation or maintenance of the institutional controls. The support agreement must detail the specific responsibilities for items including administration, inspection, maintenance, funding, and enforcement that will be required from each supporting agency. The appropriate vehicle and the specific format and requirements for the preparation of a support agreement will depend on site specific characteristics and the nature of the agency that is providing the assistance.

(2) If DOD is to retain title to a piece of OE-contaminated property as part of an active military installation (e.g., Aberdeen Proving Ground), the institutional control program may also be recorded in the Base Master Plan (BMP). The BMP establishes land uses similar to a municipal zoning plan and is utilized in the evaluation of land use decisions and for project planning. Prior to using the BMP as a means to establish an institutional control program at a base, it should be confirmed that the specific installation BMP can be used for this purpose and that the BMP system is adequate to ensure adherence to the proposed institutional control program.

(3) A Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU) between the DOD installation, USACE, and the appropriate regulatory agencies may also be used to record the details of an institutional control program.

(4) An institutional control program shall be recorded as a response action in a Remedial Action Plan (RAP) or Record of Decision (ROD). For example, at Aberdeen Proving Ground, Maryland, the institutional control plan was included in the ROD for the site; thereby, making the institutional control legally enforceable. In addition, by recording the institutional control in the ROD, the Army becomes legally responsible for complying with, funding, and implementing the plan.

(5) Regardless of which instrument is used to implement an institutional control program, the institutional control plan should include a description of each institutional control, the purpose for the control, specific conduct and activities that are prohibited, requirements for implementation of the control, and procedures to take if the land use plans change. References to applicable site characterization documents (e.g., Remedial Investigation/Feasibility Study, EE/CA, ROD, Action Memorandum, etc.) should also be included. The institutional control plan should include a land survey

of the site boundaries, and in the case of sites at active installations, the boundaries should be added to appropriate base maps.

d. Funding the Implementation and Maintenance of the Institutional Control Program. As with any remedial alternative, funding is a key issue in the implementation of an institutional control program. USACE must commit to programming funding for both the implementation year and the out-years to ensure that funds are available to implement and maintain the proposed institutional control program.

(1) Determination of Funding Requirements. In evaluating the implementation of an institutional control program at a site, the funding requirements for all aspects of the program must be considered upfront. The relative costs of different combinations of institutional controls and their applicability to site-specific conditions should be evaluated. The land use matrix and other tools introduced in Chapter 5 for use in the assessment and comparison of remedial alternatives may be helpful.

(2) Alternative Solutions for Fund Site Management. Appendix D contains a listing of programs that might be used as part of an institutional control program at an OE-contaminated site. Additional sources of funding may be available through these programs, as was the case when the Sikes Act was used at Aberdeen Proving Ground in Maryland.

e. Providing Public Notice of the Proposed Institutional Control Program.

(1) The USACE Real Estate Handbook (ER 405-1-12) requires that when land contaminated with OE or toxic agents is released or transferred, the general public must be notified regarding the possible presence of and inherent danger of handling such contaminants. This notice may take various forms such as newspaper articles or advertisements, television or radio announcements, or posting notice at the site. The notice should include not only the risks posed by the site, but also instructions on how to report the discovery of an OE object or any injuries suffered as a result of an explosion or exposure to toxic agents. The notice should also include the name and telephone number of the responsible agency and a warning that any incidents should be reported immediately. Local government agencies, such as local law enforcement, whose cooperation should be secured in the development of the institutional control program, can provide assistance in the timely reporting of such a discovery or accident.

(2) In addition to the general public notice described above, an effort should also be made to notify and inform local scrap dealers about the potential presence and the dangers of OE objects. This is due to the fact that many OE accidents are the result of explosive objects being removed from a property and sold to the local scrap dealer. Scrap dealers should be asked to refuse to buy military scrap from private parties unless it has been processed in accordance with OE MCX policy in order to avoid such accidents.

6-3. Implementing an Institutional Control Program.

a. Legal Framework and Regulatory Programs.

(1) Federal, state, and local governments play a key role in the implementation of institutional control programs at OE-contaminated sites. These agencies may use existing programs that they already administer to implement an institutional control program. By using such programs, the Federal, state, and/or local agency can show the legal authority and jurisdiction necessary to implement the proposed institutional control.

(2) In general, Federal and state regulatory agencies have direct legal authority to protect human health and the environment, prevent releases of contaminants, and control activities at contaminated sites through the statutory authority provided under CERCLA and RCRA. In a similar manner, state and local government agencies typically have authority and jurisdiction in the implementation of land use zoning and land use plans, the issuance of building permits, the enforcement of public health programs, and the enforcement of statewide environmental programs.

b. Deed Language for Proprietary Controls and Other Commitments.

(1) Ensuring that the correct deed language is used to implement a legal mechanism, such as a deed restriction, is critical to the success of the restriction. The specific language necessary to make the restriction enforceable within the jurisdiction often varies depending on the state in which the site is located. An example of deed language to establish a reversionary interest is included in Appendix G. This example is provided for illustrative purposes only and should not be used without appropriate legal review. The appropriate legal language will vary depending on site specific conditions and state and local law.

(2) The American Society of Testing and Materials Risk Based Cleanup and Assessment Guidelines outline four general conditions that must be met to make a deed restriction binding and enforceable. They include:

(a) The restriction must be in writing.

(b) The duration of the restriction must be specified. For the restriction to be held in perpetuity the phrase “runs with the land” is commonly used.

(c) For enforcement purposes, parties must have privity of estate (i.e., a real relationship to the land). Therefore, the state or other government entity must be the buyer or seller in order to enforce the

deed restriction. An entity that is not privy to the land may have the power to enforce a deed restriction if, at the time of the purchase, the buyer was made aware of this and it is written in the deed.

(d) The restriction must “touch and concern the land”. This means that the land or the use of the land must be the focus of the restriction. Generally, these types of restrictions devalue the owners legal interest in the land in some way. Promises that are personal in nature and only concern human activities on the land are least likely to be enforceable.

(3) More specifically, land transfer documents for sites that may contain OE should address the following issues:

(a) A stipulation of the permissible end uses consistent with the clearance depth and a statement that any future use that is inconsistent with these use restrictions will present explosive hazards. If the clearance depth was less than the DDESB default for commercial/residential/ utility construction activity (see Table 3.2), the land transfer documents must include a requirement to notify USACE before any commercial/residential/utility construction activity. Transfer documents should also require that no excavation be accomplished until USACE has either granted permission to excavate or has come to the site to perform nonintrusive geophysical surveys and/or remediate the property prior to or in conjunction with excavation.

(b) If an OE clearance depth was determined using site specific information or penetration data, the deed should prohibit soil disturbance below the OE clearance depth.

(c) If the clearance depth was based on DDESB defaults, the future land use will be restricted to that depth commensurate with the chosen default depth (see paragraph 3-5).

(d) The transfer documents will detail the amount and type of known or suspected OE, describe the OE response actions taken during the investigatory and remedial stages of the project, and, if applicable, provide an estimate of the type and amount of OE remaining on the site.

(e) If OE is believed to be located above the frost line, but below the removal depth, the land transfer documents will provide the USACE the right of access to the property in order to conduct periodic surveys. The length of time that this right of access will be necessary will be determined by USACE based on site specific information.

c. Records and Community Involvement.

(1) Army policy requires that properties slated to become inactive or closed are to have all records relating to OE contamination of the property maintained in perpetuity. When accountability and control of Army real property that contains OE is transferred to another DOD component or Federal agency, that action will be accompanied by a transfer of all records relating to the OE contamination of the property. These records will be permanently maintained by the receiving agency.

(2) The information listed in Paragraph 6-3(b)(3) above must be included with the AR 405-90, Disposal of Real Estate, report of excess to ensure entry in the permanent land records of the civil jurisdiction in which the property is located.

(3) In addition, when an OE-contaminated property is transferred between government agencies, a MOA will be negotiated between the USACE and the receiving Federal agency. The MOA will define the area of concern, identify any specific land use restrictions of the property, and outline any legal or engineering controls that have been established on the property.

(4) The release of OE-contaminated properties currently owned by DOD to owners outside of DOD is generally unacceptable. If, however, such a transfer is considered, an explosives safety submission must be prepared and submitted to the Department of Defense Explosives Safety Board (DDESB). The explosives safety submission will refer to sufficient supporting documentation (e.g., administrative record, risk assessment, site investigations, and other site-specific documentation) in order for the DDESB to make an informed decision on the viability of the proposed institutional controls for a subject site.

(5) The importance of providing public notice of an institutional control program and including the community in the development of the plan has been stressed throughout this report. An organized community involvement program that is used throughout the development and implementation of institutional controls will keep local government representatives and the citizenry informed. By keeping these groups informed, feedback may be obtained which may be helpful in developing an effective institutional control program. Such feedback also serves to foster goodwill between DOD and the community. A complete record must be maintained of all community involvement activities performed during the development and implementation of an institutional control program. These records will be maintained along with the other OE site investigation and remediation records prepared for the property.

d. Appendix H contains a checklist addressing issues related to implementing institutional controls.

6-4. Maintenance of an Institutional Control Program. This section provides a general discussion of some generic operations and maintenance considerations for an institutional control program.

a. Maintaining the Effectiveness of Institutional Controls.

(1) Setting up evaluation criteria. The institutional control plan should include the development of site specific criteria that will be used to ascertain whether the program is achieving the specified goals. The criteria may include:

(a) Is the current land use appropriate or in compliance with the institutional control program?

(b) Are engineering controls performing as intended? For example, if fences are used as a barrier to access, an evaluation may include review of trespassing occurrences and how they were handled, as well as evaluation of the physical condition of the fence (e.g., are there any holes or gaps in the fencing). If signs are used, an evaluation should include a review of whether the signs are generally heeded or ignored, and whether the signs are easy to understand and visible.

(c) Is the public notice and education component of the institutional control program reaching those at risk? This may be evaluated by reviewing attendance at public education meetings, gauging public response to the controls, conducting random interviews throughout the community, etc.

(2) Developing procedures to coordinate the activities of the responsible parties. The institutional control plan should address the responsibilities of the various parties involved for maintaining the effectiveness of the institutional control plan. These procedures should include the frequency and types of inspections; reporting requirements for any inspections made; reporting of any noted violations; and, enforcement responsibilities.

b. Resources. The resources available for maintenance activities should be considered when comparing different institutional controls that may be implemented at a site. Resources may be available at the Federal, state, and/or local level. The available resources will vary from site to site. For example, one locality may have a strong, well developed and administered local planning agency or building permitting agency, making zoning and permitting restrictions more attractive and feasible as institutional controls in that location. On the other hand, some areas may have very little in the way of local government resources that can be drawn upon to help maintain an institutional control program. The level of interest and cooperation from any potential agencies must be considered before obligating these agencies to assist in the maintenance of institutional controls.

c. Enforcement Authorities. The enforcement authority will depend on the type(s) of institutional control implemented at a site as well as the legal authority held by the prospective enforcement agency.

(1) Zoning. Depending on the site location, the state and/or the local government may have the authority to develop, modify, and enforce existing zoning ordinances. However, zoning ordinances have mixed legal authority, depending on the jurisdiction, and are often modified over time. This should be considered, therefore, before using zoning ordinances as an institutional control.

(2) Property Laws. The effectiveness of property laws as part of an institutional control program also varies greatly between states. Depending on the location and on the type of agreements pertaining to a site, Federal, state and local governments, as well as private citizens, may have the right to enforce or seek enforcement of an institutional control through common property laws. For example, in the case of restrictive covenants and easements, the parties to the agreement have the right to seek enforcement if one party violates the conditions of the agreement. The parties to these agreements may include Federal, state and local government agencies, private organizations, or private citizens.

(3) Permitting. Establishing an institutional control through a permitting program can be an effective component of an overall institutional control program. Enforcement of permitting programs lies with the administering agency. For example, building permits are generally administered by the local government and agencies of the local government that have been established to administer and enforce such programs.

(4) Other Laws or Ordinances. Depending on the site, other agencies may have enforcement authority. For example, the United States Fish and Wildlife Service has authority at Aberdeen Proving Ground, Maryland where OE-contaminated areas were designated as Natural Resource Management Areas as part of an institutional control program.

d. Coordination of Long-Term Responsibilities. The support agreement developed for the site should include a discussion and assignment of long-term administration, maintenance, funding, and enforcement authority.

e. Funding. The operation and maintenance activities necessary as part of an institutional control program will require on-going funding. The amount of funding required will vary on a site-by-site basis and will depend on many factors including the type(s) of institutional control selected, the location of the site, and the associated level of cooperation and support from local agencies. Negotiations with the local administering agency will be necessary to determine the exact level of funding. The specific funding to be given to an agency should be included in the institutional control plan. USACE districts will be responsible for planning and programming the necessary funding for the operation and maintenance of the institutional control program.

f. Monitoring/Inspection Requirements.

(1) In order for an institutional control to be effective in protecting the public from residual contamination at a site, periodic monitoring and inspection activities must be a part of the institutional control program. The institutional control plan should address the need to maintain access to a property for monitoring and inspection requirements. This may be accomplished through the use of an easement. Appendix G contains sample language for such an easement. Access to a site could also be accomplished under a right-of-entry agreement, however such an agreement is binding only on the current landowner and may be voided if the property is sold. In contrast, a properly executed easement will run with the land, ensuring access to the property for the extent of long-term monitoring required by institutional controls.

(2) Type of Inspections. Legal mechanisms such as deed restrictions, permitting programs, zoning ordinances, and siting restrictions will require periodic site visits to ensure that the controls are being obeyed. The exact content of these site visits will vary depending on site specific characteristics and restrictions, but may entail visual observation of land use and interviews with property owners, neighbors, and users. Such interviews should ascertain whether the current use(s) are appropriate for the site's conditions relative to the residual contamination and whether the land use is in compliance with the institutional control program. Engineering controls such as signs, fences, and soil caps will require similar site visits which, in addition to an assessment of land use and site activities, will also include inspection of the integrity of the physical control.

(3) Areas to be Inspected. Any areas containing residual contamination which is being controlled by an institutional control should be included in a site inspection. It may also be appropriate to observe surrounding land use during the inspection to evaluate whether the assumptions made at the time the institutional control plan was developed are valid and whether the chosen control is still protective of human health.

(4) Frequency of Inspections. When contamination is left in place and an institutional control program has been used to limit the risk, the Federal Government is required to review the remedy at least every five years. More frequent inspections may be necessary in the case of land use controls, for example, when the site is located in an area of rapid or continual development. More frequent inspections may also be required by certain statutes that may have been used as part of an institutional control program. For example, the Sikes Act which was used at Aberdeen Proving Ground, Maryland to designate two OE-contaminated sites for use as Natural Resource Management Areas, requires regular review (not less often than every five years) of the operation and effectiveness of the plan in terms of natural resource management and yearly reports on related activities. USACE districts are responsible for coordinating these inspections and reviews.

h. Appendix I contains a checklist addressing operations and maintenance issues for institutional controls.

6-5. Procedures for Modification or Termination of an Institutional Control Program.

a. Introduction. Over time, it may become necessary to modify or terminate an institutional control program. The institutional control plan should address the procedures for performing periodic reviews of the institutional control to determine the effectiveness of the institutional control program, and for making any changes that are deemed necessary.

b. Conditions for Modification of the Institutional Control.

(1) An institutional control may require modification due to changes in land use or improvements in OE detection or removal technology. Advances in detection, removal, and destruction technologies may make additional site cleanup economical and safe at some point in the future. Current technologies are limited in the extent of removal that can be achieved at a reasonable cost. Many times, the cost of ordnance removal actions exceeds the value of the real estate. With the current state of ordnance removal technologies, removal actions do not guarantee complete clearance of a site. There are currently several programs underway to identify technological improvements in OE detection and removal technologies. An example of one such program is the UXO Advanced Technology Demonstration Program established by the U.S. Army Environmental Center to evaluate and identify innovative, cost-effective, commercially available systems for the detection, identification, and removal of UXO that may improve the efficiency of removal actions in the future.

(2) Advances in OE detection and removal technology may make it possible to further characterize the distribution of OE and/or remove these items, thereby decreasing the risk of OE exposure at a site and perhaps decreasing the need for the current level of restrictions. The need for and the effectiveness of the institutional control program should then be reviewed based on the new site condition or technology.

(3) An institutional control plan may also require modification due to changes in local land use to ensure that the controls that are in place are still protective of human health and the environment.

c. Conditions for Termination of the Institutional Control. The risk from OE is long-term and OE items are expected to remain hazardous for an indefinite period of time. Although munitions components may deteriorate through weathering and corrosion to a point that the munition will not function as intended, there is no easy way to know how long this process may take, and deterioration does not necessarily mean that the munition is not hazardous. The nature of OE seems to preclude the possibility that institutional controls implemented to prevent exposure to these items can be completely eliminated, unless advances in OE detection and clearance technology make detection and removal of these items more economical, complete, and safe.

d. **Legal Requirements.** If an institutional control requires modification or termination, legal counsel should be consulted to determine the specific steps required (e.g., the legal steps required to remove a deed restriction).

e. **Coordination among authorities, land owners, and other organizations.** In considering modification or termination of an institutional control, all parties involved in the development, implementation, maintenance, etc. of the institutional control program should be consulted.

f. **Funding.** A source of funding should be identified in the institutional control plan to support evaluation of modification or termination. The responsibility for funding additional cleanup should also be addressed in the institutional control plan.

g. **Advances in Technology.** As discussed above, advances in OE detection, removal, or destruction technologies may make cleanup of OE-contaminated sites more economical, efficient, and safe. The institutional control plan should address responsibility for determining when additional cleanup activities would be conducted and who would be responsible for funding and conducting such activities.

h. **Appendix J** contains a checklist addressing issues related to modification and termination of institutional controls.

APPENDIX A  
REFERENCES

A-1. Section I  
Required Publications

Base Realignment and Closure Act of 1988, Public Law (PL) 100-526, 102 Stat. 2632.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, PL 96-510, 94 Stat 2767, 42 USC 9601.

Defense Base Realignment and Closure Act of 1990, PL 101-510, 104 Stat. 1808.

Defense Environmental Restoration Program, PL 99-499, Section 211, 100 Stat 1719, 10 USC 2701 et seq.

Resource Conservation and Recovery Act (RCRA) of 1976, PL 94-580, 90 Stat 2796, 42 USC 6901, et seq., as amended.

Superfund Amendment and Reauthorization Act (SARA) of 1986, PL 99-499, 100 Stat 1613, amending CERCLA, 42 USC 9601 et seq., and miscellaneous other sections.

40 CFR Part 260, et al  
U.S. Environmental Protection Agency (EPA) Military Munitions Rule

DOD 6055.9-STD  
Ammunition and Explosives Safety Standards

AR 385-61  
Army Toxic Chemical Agent Safety Program

AR 385-64  
Ammunition and Explosives Safety Standards

AR 405-90  
Disposal of Real Estate

DA Pam 385-61  
Toxic Chemical Agent Safety Standards

EP 1110-1-24  
15 Dec 00

ER 5-1-11  
Program and Project Management

ER 385-1-95  
Safety and Health Requirements for Ordnance and Explosives Response Actions

ER 405-1-12  
Real Estate Handbook

ER 1110-1-12  
Quality Management

ER 1110-1-8153  
Ordnance and Explosives Response

EP 1110-1-18  
Ordnance and Explosives Response

HQDA 385-98-1, DACS-SF  
Explosives Safety Policy for Real Property Containing Conventional Ordnance and Explosives

“Linking Land Use and Superfund Cleanups: Uncharted Territory”, 14 July 1997, Resources for the Future, 1616 P Street, NW, Washington, D.C. 20036.

“Institutional Controls in Use”, September 1995, Environmental Law Institute Research Report, 1616 P Street, NW, Suite 200, Washington, D.C. 20036-1493.

Pendergrass, John. “Use of Institutional Controls as Part of a Superfund Remedy: Lessons from Other Programs”. Environmental Law Reporter, March 1996.

“DoD Policy on Responsibility for Additional Environmental Cleanup after Transfer of Real Property”, Internet Edition, Policy Memorandum from the Acting Under Secretary of Defense (Acquisition and Technology), Washington, D.C.

“BRAC Environmental Program Fact Sheet, Institutional Controls, What They Are and How they are Used”, Spring 1997, Office of the Assistant Deputy Under Secretary of Defense (Environmental Cleanup), 3400 Defense Pentagon, Washington, D.C. 20301-3400.

“Fact Sheet -- Field Guide to FOISL”; Fall 1996, Office of the Assistant Deputy Under Secretary of Defense (Environmental Cleanup), 3400 Defense Pentagon, Washington, D.C. 20301-3400.

“Fast Track to FOST: A Guide to Determining if Property is Environmentally Suitable for Transfer”; Fall 1996, Office of the Assistant Deputy Under Secretary of Defense (Environmental Cleanup), 3400 Defense Pentagon, Washington, D.C. 20301-3400.

“A Guide to Assessing Reuse and Remedy Alternatives at Closing Military Installations”, February 1996, Office of the Assistant Deputy Under Secretary of Defense (Environmental Cleanup), 3400 Defense Pentagon, Washington, D.C. 20301-3400.

“A Guide to Establishing Institutional Controls at Closing Military Installations”, Fall 1997, Office of the Assistant Deputy Under Secretary of Defense (Environmental Cleanup), 3400 Defense Pentagon, Washington, D.C. 20301-3400.

## A.2 Section II

### Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this regulation.

AR 25-30

The Army Integrated Publishing and Printing Program

EP 1110-3-8

Public Participation in the Defense Environmental Restoration Program

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## APPENDIX B OVERVIEW OF THE BRAC PROGRAM

### B-1. General.

a. The Base Closure and Realignment Act of 1988 (Public Law 100-526, 102 Stat. 2623) and the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510, 104 Stat. 1808) provide for a recurring, systematic review and evaluation of all installations operated by the U.S. Armed Forces. The purpose of the process is to create operational, economic, and strategic efficiency by recommending closure and/or realignment of installations to best serve the defense needs of the United States. When the decision is made to close an installation, a Community Reuse Plan is prepared. The Community Reuse Plan identifies the proposed future use of the property that will be transferred to the private sector.

b. In 1993, the Community Reinvestment Program was introduced to speed the economic recovery of communities affected by BRAC decisions. As part of this program, DOD developed the Fast-Track Cleanup Program. The objectives of the Fast-Track Cleanup Program are to protect human health and the environment, to make property available for reuse and transfer as soon as possible, and to provide for effective community involvement. Under the Fast-Track Cleanup Program, DOD has developed guidance on the environmental review process that is to be used to reach a Finding of Suitability to Transfer (FOST) or Finding of Suitability to Lease (FOSL) for real property made available under the BRAC process. This guidance provides a framework for documenting the conclusion that a property is environmentally suitable for transfer by deed or by lease under Section 120(h) of CERCLA and the National Environmental Policy Act (NEPA).

c. Under the Fast-Track cleanup process, the DOD will indemnify lessees or owners of transferred property for claims arising from contamination resulting from past DOD operations. The FOST and FOSL processes used by DOD are similar. Figure B-1 and Figure B-2 illustrate the steps in the FOST and FOSL processes, respectively.

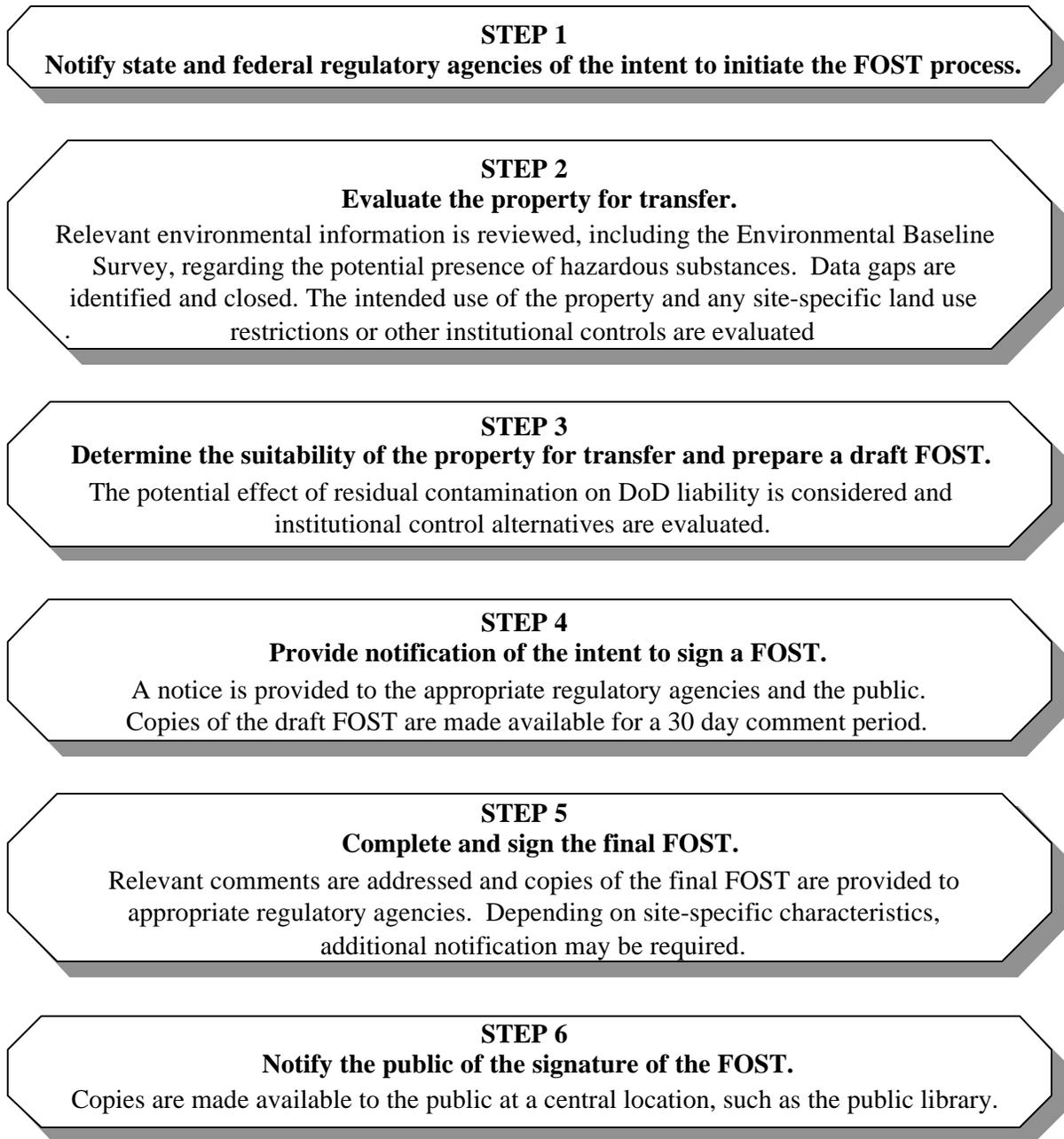


Figure B-1. BRAC Fast-Track Process: Finding of Suitability to Transfer (FOST)

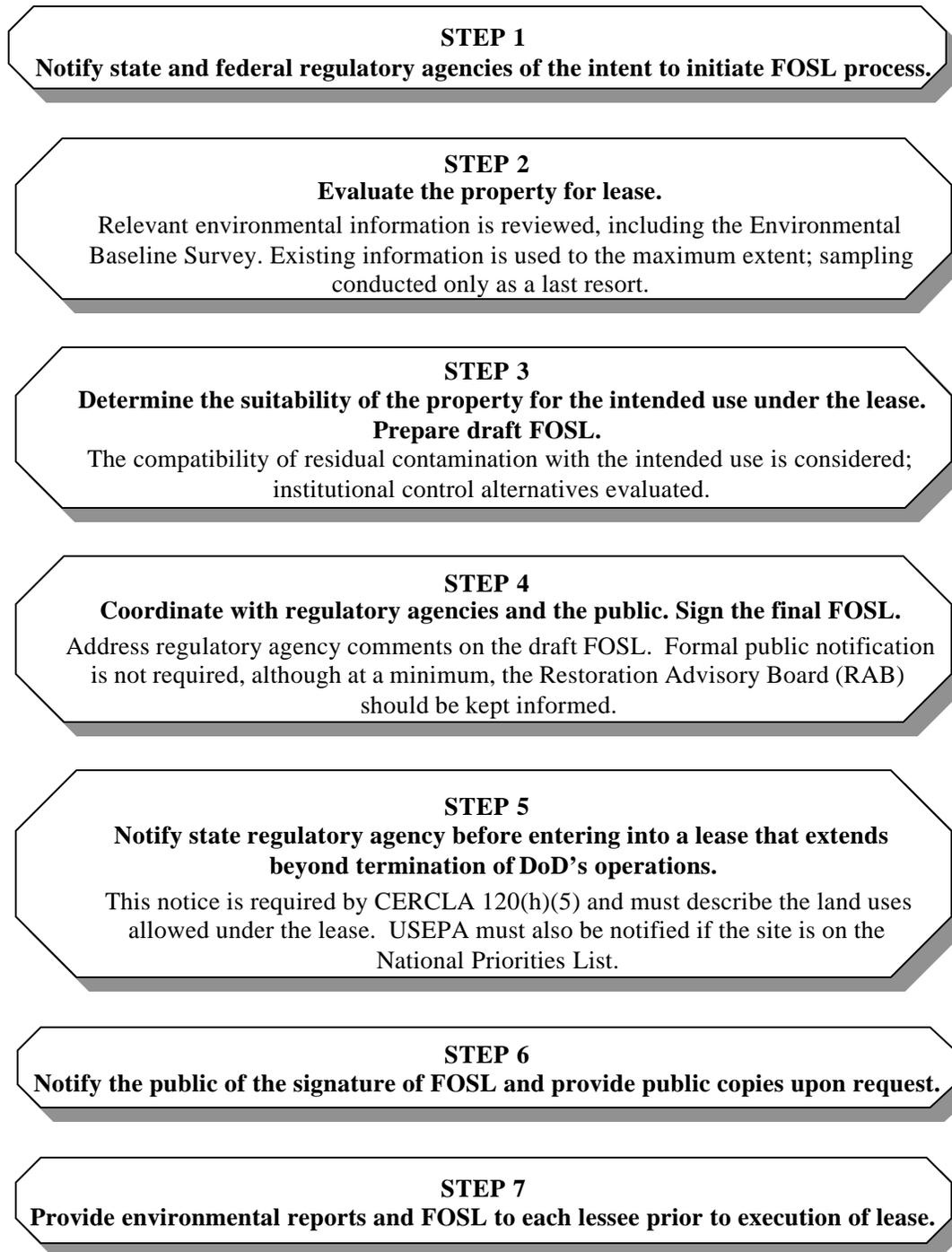


Figure B-2. BRAC Fast-Track Process: Finding of Suitability to Lease (FOSL)

**APPENDIX C**  
**EXAMPLES OF INSTITUTIONAL CONTROLS**

C-1. Introduction. Institutional controls are mechanisms that protect property owners and the local community from residual risk on a property contaminated by OE. As discussed in Chapter 2, institutional controls include legal mechanisms, engineering controls and educational controls. This appendix provides more detailed information on these types of institutional controls. In particular, the strengths and limitations for each type of institutional control are discussed.

C-2. Legal Mechanisms. Legal mechanisms are categorized into two broad areas: proprietary controls and local government controls. The types of legal mechanisms are outlined in Table C.1 and are discussed below.

a. Proprietary Controls. Proprietary controls are those institutional controls that are associated with ownership of the land and therefore, often included in the deed for the land. Proprietary controls are classified as either nonpossessory or possessory controls.

Table C.1 Legal Mechanisms	
Proprietary Controls	Nonpossessory Controls <ul style="list-style-type: none"> <li>• Easements               <ul style="list-style-type: none"> <li>– Appurtenant Easement</li> <li>– Gross Easement</li> <li>– Affirmative Easement</li> <li>– Negative Easement</li> <li>– Statutory Easement</li> </ul> </li> <li>• Restrictive Covenants</li> <li>• Reversionary Interests</li> </ul> Possessory Controls <ul style="list-style-type: none"> <li>• Property Ownership</li> <li>• Limited Partnerships</li> </ul>
Local Government Controls	Zoning Restrictions Permit Programs Siting Restrictions Overlay Zoning

(1) **Nonpossessory Proprietary Controls.** Nonpossessory proprietary controls means the holder of these interests has a right to use or restrict use of a piece of land, but does not have the right to actually possess it. Examples of this type of control include easements, restrictive covenants, and reversionary interests.

(a) **Easements.** The most common nonpossessory proprietary control is known as an easement. An easement is an interest in a piece of land that entitles its holder to use the land or restrict the use of the land owned by another. Easements may be categorized as appurtenant or gross; affirmative or negative; or statutory.

- **Appurtenant Easement.** An easement is considered appurtenant if the holder is the owner of nearby land which benefits from the easement. For example, this occurs when a neighbor is allowed to walk across another person's property to access the beach.
- **Gross Easement.** A gross easement is one in which the holder, usually a company or public entity, does not own the land, but has the ability to use it. For example, this occurs when a gas company is allowed to lay a gas line on another person's property.
- An affirmative easement allows the holder of the easement to use the land in a way that otherwise they could not. This is the most common type of easement. An example of an affirmative easement is, again, the gas company that has the ability to lay a gas line on another person's property.
- A negative easement prohibits the use of the land in a manner that would otherwise be legal. An example of a negative easement is the owner of a hazardous waste landfill who is prohibited from developing the property for another use because of the current use of the site.
- Some states have developed statutory easements, including conservation easements, which restrict the property use to one that is compatible with conservation of the environment or scenery. In the particular case of sites contaminated with OE, an easement may be enacted that would restrict the new property owner to land uses that are compatible with the level of OE clearance performed during the removal action. Easements have been used under CERCLA Section 120(h) to ensure that the federal government has access to a site to conduct additional response actions or to perform any necessary operations and maintenance (O&M) at a site that is undergoing active remediation of residual contamination.

(b) **Strengths and Limitations of Easements**

- As with all proprietary controls, the effectiveness of an easement to control appropriate use of a property containing residual contamination is dependent on the compliance of

the property owner with the easement. Generally, only the holder of an easement has the power to enforce compliance with the terms of the easement. This requires that the holder remain aware of activities at the property and is kept informed of any proposed changes in use of the property. If the holder of the easement (e.g., DOD) does not act on a land use violation once it has been identified, third parties (such as local or county governments) do not have the authority to enforce the easement.

- In the case of OE-contaminated sites where DOD may be the holder of an easement, but may not have a continuing local presence, periodic site visits would be required to assure that the property owner complies with the easement. If the holder of the easement does act, but the courts conclude that the action was not timely, it may be deemed that the holder of the easement forfeited its rights under the easement. Generally, however, equitable defenses such as laches, waiver and estoppel (which limit the timeframe within which enforcement must occur) typically do not apply to the federal government as they would to private entities. Even so, site visits should be conducted at predetermined intervals (e.g., annually, semi-annually, every three years, etc.) so that any violations can be addressed in a timely manner to ensure public safety.

(c) Restrictive Covenants. A restrictive covenant, which is also known as a deed restriction, is commonly used by the federal government to prohibit certain types of development, use, or construction on a piece of land where residual contamination does not allow unrestricted use of the property. Under a restrictive covenant, the government can usually take legal action to enforce the restriction if the new property owner does not abide with the development restrictions imposed at the time of sale or lease. A restrictive covenant may be either affirmative or negative. An example of an affirmative restrictive covenant is the landowner is required to do something that he/she would otherwise not be required to do. An example of a negative restrictive covenant is landowner may not do something that he/she is otherwise normally free to do.

(d) Strengths and Limitations of Restrictive Covenants. One advantage of restrictive covenants over easements is the flexibility to apply restrictions not only to an individual plot of land, but also to an entire area. Restrictive covenants tend to be a less desirable method of control than easements. Restrictive covenants have been controversial in the past because many were intended to maintain elite neighborhoods and viewed to be racist in their intent. For this reason, many restrictive covenants have been removed by judicial order. In addition, the variability of state property laws tends to be greater for restrictive covenants than for easements, making them more difficult to administer. In general, a covenant does not give the holder the right to enter and inspect the property to ensure that the owner is complying with the covenant. Therefore, an easement or some other agreement should also be agreed upon at the time a covenant is implemented as an institutional control.

(e) Reversionary Interests. This type of proprietary control is also known as “future estates”. The deed establishes certain conditions that would cause the property to revert back to the original owner if the conditions cited in the reversionary interest are violated. As such, this type of institutional control is like an easement, but with the added provision that if the terms of the institutional control are violated, the property will revert back to the original owner (the holder of the reversionary interest). The existence of a reversionary interest does not, in itself, prevent incompatible land uses, but it does provide the means for stopping the incompatible activities by reverting ownership rights to the original owner if a violation were to occur. Reversionary interests have been effectively used in the past to control future land use on sites that contain environmental contamination.

(f) Strengths and Limitations of Reversionary Interests. Reversionary interests have been used effectively in the environmental context to control land uses. Reversionary interests held by the government can last a very long time because equitable defenses such as laches, waiver and estoppel typically do not apply to the Federal Government as they would to private entities or individuals. Thus, although a reversionary interest does not prevent inappropriate use of a property, it can serve to halt such activities by reacquisition of the land by the holder of the reversionary interest.

(2) Possessory Proprietary Controls. A possessory proprietary control means that the holder of the control retains either a full or partial interest in the future use of the land. Such controls can be achieved either by retaining ownership or by retaining a major share in a joint ownership of a property through a limited partnership with others. Such programs have been used both in the private sector, as well as by the government, where the holder of the possessory proprietary control wishes to retain some say in the future use of a property without having the responsibility of complete and total ownership. Limited partnerships are an example of a possessory proprietary control that has been used in the past to limit future land use.

(3) Strengths and Limitations of Proprietary Controls. The administrative structure and support staff is usually already in place to enforce the control (although additional funding may be required). A potential limitation of proprietary controls is that their enforceability is governed by state property laws. This presents a difficulty common to all proprietary controls in that property laws vary widely from state to state. Therefore, the specific laws of the state in which the site is located must be carefully reviewed when using these mechanisms as an institutional control. Particular attention should be paid to the state’s requirements for creating a restriction that is enforceable and binding on both present and future owners and users. Currently only 16 states require that deed records used in proving title include information regarding certain conditions involving hazardous wastes or substances on a site (e.g., sites that had hazardous waste permits or are on the state hazardous waste site inventory). However, since most transfers of land are accompanied by a due diligence title search by an attorney or lending institution, a deed restriction may provide an effective notice to a potential buyer. Even if a potential owner chooses to ignore this notice and decides to proceed with the purchase of the

property, with the intention to develop it inappropriately, the lending institution approached for financing the project may have a greater incentive to ensure that the planned use is compatible.

(4) Proprietary controls require periodic site visits to assess whether the land use restrictions are being obeyed. To increase the effectiveness of proprietary controls at OE sites, it is necessary to agree at the time that the restriction is placed in the deed what third party, such as a local government or state agency, is responsible for performing the site visits and enforcing the institutional control. Again, the institutional control must be implemented in accordance with the specific property laws of the state in which the site is located. Additionally, government agencies and third parties must have an interest in and have the capability to monitor compliance with the restriction. Finally, it should be ensured when implementing the institutional control that all parties - USACE, local government, property owner, and property user - share the same interpretation of the restrictions at the time the legal mechanism is imposed so that there are no misunderstandings as to the development restrictions placed on the property.

b. Local Government Controls. Other types of legal institutional controls have evolved in the U.S. legal system to be reserved for use strictly by local government authorities. Local government controls provide potential avenues for the implementation of institutional controls at sites that are contaminated with OE. In the context of environmentally-contaminated sites, this group of land use controls is typically developed, implemented, and enforced through cooperative agreements negotiated between Potentially Responsible Parties (PRPs) and local and state government officials. The Federal Government (e.g., USEPA) has not historically asserted its authority under CERCLA to enforce such land use controls once they have been established. Controls on land use which local governments have the power to impose and enforce include zoning restrictions, permitting programs, siting restrictions, and overlay zoning.

(1) Zoning Restrictions. The primary method of locally controlling land use is through the development of zoning ordinances and community master plans. A typical zoning program geographically divides an area into zones with different regulations written to apply to each zone. The regulations vary between zones but apply equally to all properties within a zone. Generic zoning categories include residential, commercial, and industrial. The zoning restrictions that have been developed by the local zoning board are often posted in a master plan which lays out the type of use that is allowed in a particular area. Unfortunately, in most states master plans are not enforceable by law. Historically, the granting of variances to a local government's master plan has sometimes resulted in inappropriate land uses with regards to residual contamination on a site.

(2) Strengths and Limitations of Zoning Restrictions.

(a) Local zoning ordinances have the authority, based on state and local law, to restrict land use. However, no other area of U.S. law experiences the exceptional frequency of requests for amendments (e.g., rezoning) or revisions (e.g., variances and special exemptions) that is

common in the area of zoning ordinances. Although the rezoning process may be long, involving public notice, planning commission hearings, staff reports, governing body hearings, and public comment periods, it is the most common land use action taken by local government. This fact emphasizes the importance of buy-in on the part of the local government when using zoning as part of an institutional control program.

(b) One limitation with the use of zoning as an institutional control is the fact that local planning decisions are often driven by economic and political forces and often do not reflect the vision of a community. The local planning commission may be comprised of building contractors, real estate agents, and developers whose interests tend to be focused on deriving the highest economic value from a property with less attention given to the impact on human health and the environment.

(c) The Standard Act which has been used by many jurisdictions as the basis for local zoning programs was not designed to address many of today's land use issues. Many comprehensive plans were originally created as a reflection of existing land use patterns, not as a tool for planning future land use. Many local government bodies are therefore moving towards broad land use plans, describing land use objectives in words rather than maps. Whether a community continues to use master plans or develops general land use objectives, it must be recognized that they are most often advisory and do not carry the force of law.

(3) Permit Programs. Permit programs are another means that local governments have to limit land use. In establishing a permit program, the permitting agency determines specific conditions which must be met before a certain use or action is allowed on a property. Existing permit programs include building permits, water/sewer connection permits, and state well drilling permitting systems which have been developed to protect the quality and use of ground water. Permit programs have also been developed to help ensure that site developers are aware of and comply with special procedures that are required in the development of a parcel (for example, requiring a builder to replace the existing soil on a parcel because of its poor structural characteristics). Historically, permit programs have been developed in areas where special requirements are necessary to protect human health and the environment because of residual contamination that remains on a property. In the particular case of an OE-contaminated site, a permit program can be established that would require a developer to contact a UXO contractor approved by USAESCH to clear an area of OE prior to excavation for footings or foundations. Permitting programs provide an avenue by which both local authorities and USAESCH may become aware of land use activities that may not be compatible with the presence of OE. In order to maintain a successful permit program, a system to verify compliance with the permit program and the authority to bring violators back into compliance is required.

(4) Strengths and Limitations of Permit Programs. Permit programs are probably one of the easiest of the local governmental controls to implement. Permit programs are generally administered by a single local government entity and thus avoid regulatory confusion over

responsibility. A permitting system can effectively alert local officials to proposed land use changes that may be incompatible with site conditions or which may require special consideration to ensure safety. An effective system of administration is necessary in order to verify compliance with permitting conditions and to provide for enforcement to bring violators into compliance. Most localities, however, have a permitting system already in place that could be used to administer any specific restrictions at OE-contaminated sites.

(5) Siting Restrictions. Siting restrictions have historically been used to limit land use in areas subject to natural hazards such as earthquakes and floods. This type of control has also been used to protect natural resources from development (such as with the existing wetlands program). Existing programs which use siting restrictions include floodplain development laws administered by the USACE and the Federal Emergency Management Agency (FEMA). The floodplain management program involves insurance requirements in areas prone to flooding. In order for a community to be eligible for FEMA flood insurance, the local community must restrict floodplain development. As an incentive to limit development in flood prone areas, insurance premiums are tied to the probability of flooding. In addition, if development occurs within a restricted area, the entire community can lose its eligibility for insurance. This provides an incentive for those not living in the floodplain to take efforts to oppose floodplain development. Several states and local governments, also have substantial siting restrictions in place that limit the future development of properties within their jurisdiction.

(6) Strengths and Limitations of Siting Restrictions. Siting restrictions are useful in addressing large areas with similar hazards under one program. Generic siting restrictions could be developed to address the hazards common to all OE-contaminated sites, although site specific characteristics must also be considered on a case by case basis. The limitations of siting restrictions to control inappropriate development of sites are illustrated by the floodplain management program. FEMA's floodplain management restrictions have not succeeded in preventing flood damage for several reasons. First, development had already occurred in areas subject to flooding prior to the enactment of the restrictions. Secondly, local and federal interpretations of the restrictions are often different, resulting in development within restricted areas. The use of siting restrictions as an institutional control is also characterized by weaknesses similar to zoning. That is, the local planning commission may experience political or economic pressure from the community and local developers (who may be on the planning commission themselves) to allow development in restricted areas by granting variances.

(7) Overlay Zoning. Siting restrictions may be combined with local zoning ordinances or master plans to establish an effective institutional control. This practice is known as "overlay zoning". When using overlay zoning, the specific siting restriction is used as an overlay on the local government's master plan, thereby highlighting any discrepancies between the two. In the case of sites contaminated with OE, the location of the site may be identified on an overlay of the local zoning map or master plan. The overlay would serve to notify those involved in land use planning of the hazards and land use restrictions associated with the site.

(8) Strengths and Limitations of Overlay Zoning. Overlay zoning is a combination of local zoning ordinances and siting restrictions and therefore, it is characterized by a combination of the strengths and limitations discussed above for these two local governmental controls.

(9) Strengths and Limitations of Local Governmental Controls. One advantage of using local governmental controls such as zoning, building permits, siting restrictions, and overlay zoning in an institutional control program is that the administrative structure and support staff is usually already in place to enforce the control. In order to use local governmental controls as part of an institutional control program, the local authorities responsible for administering and enforcing the programs must be willing and knowledgeable participants in the development of the institutional control program. Achieving buy-in by local authorities is discussed in greater detail in other sections of this pamphlet. A potential limitation common to these types of controls is the need to balance the desire to derive the greatest economic value of a property with the need to protect the public from residual contamination. It is often difficult for local governments to limit land use due to some potential risk in the face of development that will create jobs and generate tax revenue, although the two are not necessarily mutually exclusive.

C-3. Engineering controls. Engineering controls are physical controls and include fences, posted signs, and soil caps.

a. Fences. Fences are probably the most obvious type of engineering control that has historically been used to limit the public's access to a site. Fences are used to restrict inadvertent public entry to a site that poses a threat to public health or safety. By providing access only at certain points, appropriate notice can be given to all users and uses incompatible with the existing site conditions may be avoided.

(1) Strengths and Limitations of Fences. Fences provide the most direct means of limiting incidental exposure to a contaminated site. They do not require a search of local land use records or permitting agencies to determine whether a site is safe to use. Another benefit to fencing is that local trespass laws allow for violators to be prosecuted. Fences and other physical barriers to access require routine inspection and maintenance in order to remain effective. The property owner's desires, funding for inspection and maintenance, existing use of the site and surrounding properties, and enforcement responsibilities should be considered before including a fence as part of an institutional control program.

b. Signs. Warning signs may also be used to give notice regarding the presence of hazards on a site. Signs can provide information regarding the nature of the hazard, how to avoid the hazard, and also provide a contact for additional information. Signs may be used to deter access to a site or to give notice so that inappropriate uses of the site are avoided. While signs may not provide the physical barrier that a fence does, a sign has the added benefit of providing information to the public on the nature of the hazard found at a site.

(1) Strengths and Limitations of Signs. As with fences, signs can provide a direct warning to the general public of the hazards associated with a site and are an effective means to warn anyone who comes to a contaminated site of the hazards associated with an area. Signs may provide sufficient public notice so that violators can be prosecuted under existing trespass laws. As with fences, signs require routine inspection and maintenance in order to remain effective. While not requiring as much maintenance as fences, signs do deteriorate over time and require upgrade and/or replacement. The positioning of signs is always a critical matter to ensure that they may be seen by a maximum number of people. A drawback of signs is that they do not stop anyone from entering a site, they only inform. The property owner's desires, existing use of the site and surrounding properties, funding for inspection and maintenance, and enforcement responsibilities should also be considered before being including signs as part of an institutional control program.

c. Soil Caps. Placing a cap on a contaminated site by covering it with concrete, asphalt, or clay has been proven to be an effective physical barrier to public exposure to certain types of residual contamination. Such an engineering control would have definite application for certain OE-contaminated sites, if the cap is combined with a restriction on any future excavation at the site. By combining the engineering control of the cap with the legal restriction of limiting future use, the risk of the public coming into contact with OE is virtually eliminated.

(1) Strengths and Limitations of Soil Caps. Soil caps can be a very effective measure to minimize exposure to OE. Soil caps can take on many forms and their presence does not necessarily mean that a site cannot have some beneficial use. For instance, installing a parking lot in an OE-contaminated area can provide a benefit to the local area as well as protect the local population from exposure to OE items. The integrity of the cap must be maintained through routine inspection and maintenance as well as through controls that restrict future excavation at the site. Maintenance of the cap could be the owner's responsibility, particularly if the presence of the cap enhances the development potential of a site.

C-4. Educational Controls. Educational controls include formal seminars and public notices.

a. Formal Education Programs. Educating the local community about the potential exposure risks associated with an OE-contaminated site may be done through a variety of methods. Formal education seminars may include periodic public education classes. The classes may be given to a number of different audiences including open public forums, local government and/or regulatory personnel, emergency response personnel, property owners, private developers and real estate agents, or even school children at the local schools. The training seminars would have to be tailored to meet the specific interests/concerns of the audience, but can be an effective method to "spread the word" as to the nature and extent of the hazards associated with OE and the precautions to be taken in the event that a person comes across an OE item. The training classes may either be provided by personnel knowledgeable in the specific conditions of the site or through the distribution of training videos to local civic organizations. In order to be

effective, educational efforts need to be continual so that people do not forget or become complacent about the hazards associated with OE, as well as to inform newcomers.

(1) Strengths and Limitations of Formal Education Programs. Seminars and training programs may be given to educate various segments of the local community. This may include informational seminars for schools, parent-teacher associations, local clubs, etc. and more formal training for local government and regulatory personnel, public safety personnel such as the local police and fire departments, emergency response teams, and local construction and development companies. These programs require time and money to prepare as well as cooperation from local groups to schedule the sessions. Formal educational programs should be repeated on a regular basis so that people do not forget or become complacent about the hazards associated with OE, as well as to reach newcomers to the area. Although these programs can be very effective at informing the public about potential dangers and how to avoid them, not all members of a community will attend these meetings. Therefore, additional institutional controls may be necessary at a site in order to provide sufficient risk reduction.

b. Public Notices. The local community can also be educated through the implementation of a wide-ranging public notice campaign that may include mass mailings of brochures, public service announcements on local radio or television stations, or periodic notices in local newspapers. This type of educational control will also serve to educate newcomers and visitors to the area. One method that has been used at sites with a high public turn-over is to notify any new people to the area once they have contacted the local utility to start a new service. Once the request for the new service has been received by the utility company, they may include in their initial mailing to the new customer a brochure outlining the site specific hazards and what should be done in the event of an emergency. Such programs have been successfully used by power companies that have nuclear power plants in areas that are highly developed.

(1) Strengths and Limitations of Public Notices. Public notices have the advantage of reaching a wide audience without requiring much effort on the part of the public (i.e., they do not have to take the initiative to attend a meeting to receive the information). Public notices may take the form of mass mailings, public service announcements on radio and television, and/or periodic notices in local newspapers. Recurring notices have the advantage of reaching newcomers or visitors to an area in addition to reminding long-time residents. A public notice campaign would require both initial and ongoing funding and administration. Using an existing system that is already in place can minimize the required funding and administration. An example of this would be providing recurring information in local utility bills.

APPENDIX D  
EXAMPLES OF REGULATIONS RELATED TO LAND USE CONTROL \*

Regulation/Authority	Summary
American Indian Religious Freedom Act, 42 U.S.C. § 1996	Protects and preserves religious freedoms of Native Americans, including access to religious sites and consultation with tribal leadership concerning human burial sites that Federal projects might disturb.
Antiquities Act of 1906, 16 U.S.C. § 431-433	Protects historic and prehistoric ruins and objects of antiquity on Federal lands. Authorizes scientific investigation of antiquities on Federal lands, subject to permits and other regulatory requirements, including paleontological resources.
Archeological and Historic Preservation Act, 16 U.S.C. § 469-469c	Directs Federal agencies to notify the Secretary of the Interior when they find that any Federal construction project or federally licensed activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archeological data. Also funds historical and archeological protection in such projects.
Bald and Golden Eagle Protection Act, 16 U.S.C. § 668	Governs activities and facilities that may threaten protected birds.
Coastal Barrier Resources Act, 16 U.S.C. § 3501 <i>et seq.</i>	Restricts Federal expenditures and financial assistance encouraging development of coastal barriers and habitats.
Coastal Zone Management Act, 16 U.S.C. § 1451-1464; 15 CFR 921-933	Encourages states along oceans and Great Lakes to adopt Coastal Zone Management Plans (CZMP) which require any applicant for a Federal permit to certify that its project is consistent with the state CZMP.
Endangered Species Act, 16 U.S.C. § 1531-1544; 50 CFR 17, 401-424, 450-453	Requires protection of threatened or endangered species by prohibiting activities and facilities that would have an adverse effect on them.
Estuary Protection Act, 16 U.S.C §§ 1221-1226	Requires consideration by states and Federal agencies of the need to protect, conserve, and restore estuaries.

\* From DERP-FUDS Program Manual, July 1996.

EXAMPLES OF REGULATIONS RELATED TO LAND USE CONTROL \* (cont.)

Regulation/Authority	Summary
Farmland Protection Act, 7 U.S.C. § 4201 <i>et seq.</i>	Requires Federal agencies to consider the effects of programs on farmland and to prevent conversion of farmland to nonagricultural uses.
Federal Land Policy and Management Act, 43 U.S.C. § 1701 <i>et seq.</i>	Governs retention, management, land-use planning, disposal, and acquisition of public lands; requires regulation of use and occupancy of public lands.
Fish and Wildlife Conservation Act, 16 U.S.C. § 2901 <i>et seq.</i>	Provides financial and technical assistance to states for creation and implementation of conservation programs for nongame fish and wildlife and encourages Federal agencies to conserve nongame fish and wildlife.
Fish and Wildlife Coordination Act (FWCA), 16 U.S.C. § 661-666c	Requires persons to consult with Federal and state agencies when modifying, controlling, or impounding a surface water body over 4 hectares in size.
Forest and Rangeland Resources, 16 U.S.C. §§ 1600-1614, 1641-1647, 1671-1676, 1681-1687	Four acts that govern the management, conservation, and utilization of national forest and rangeland renewable resources.
Historic Sites Act, 16 U.S.C. §§ 461-467	Authorizes designation of national historic sites and landmarks and interagency efforts to preserve historic resources.
Marine Protection, Research, and Sanctuaries Act, 33 U.S.C. §§ 1401-1445	Declares that it is national policy to regulate dumping of all types of materials into ocean waters, and to prevent or strictly limit ocean dumping of any material that would adversely affect human health or the marine environment.
Migratory Bird Conservation Act, 16 U.S.C. § 715 <i>et seq.</i>	Establishes Migratory Bird Conservation Commission to recommend for purchase, rental, or acquisition by the Department of the Interior land or water suitable for use for migratory bird conservation.
Migratory Bird Treaty Act, 16 U.S.C. § 703-712	Governs activities that may affect or threaten migratory birds or their habitats.

\* From DERP-FUDS Program Manual, July 1996.

EXAMPLES OF REGULATIONS RELATED TO LAND USE CONTROL \* (cont.)

Regulation/Authority	Summary
National Historic Preservation Act, 16 U.S.C. § 470-470w-6; 36 CFR 60, 63, 68, 800; Executive Order 11593	Establishes historic preservation as a national priority; protects, rehabilitates, restores, and reconstructs districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, or engineering. Section 106 of the NHPA establishes a process to identify conflicts between historic preservation concerns (e.g., properties included on or eligible for the National Register of Historic Places) and Federal undertakings.
Native American Graves Protection and Repatriation Act, 25 U.S.C. § 3001-3013	Prohibits the intentional removal of Native American cultural items from Federal or tribal lands except under an Archeological Resource Protection Act permit and in consultation with the appropriate Native American groups. Requires returning burial remains, associated funerary objects, and objects of cultural patrimony to the appropriate Indian or Native Hawaiian organizations and tribes. Establishes Native American ownership of human remains and associated funerary objects discovered on Federal lands.
Public Buildings Cooperative Use Act, 40 U.S.C. §§ 490, 601a, 606, 611, 612a	Encourages adaptive reuse of historic buildings as administrative facilities for Federal agencies or activities.
Sikes Act, 16 U.S.C. § 670a-670o	Authorizes the Secretary of Defense to carry out a program of planning, development, maintenance, and coordination of wildlife, fish, and game conservation and rehabilitation on military reservations. Also requires the Departments of the Interior and Agriculture to establish conservation programs on public lands.
Soil and Water Resources Conservation Act	Creates coordinated soil and water conservation program to identify and address long-term national needs.

\* From DERP-FUDS Program Manual, July 1996.

EXAMPLES OF REGULATIONS RELATED TO LAND USE CONTROL \* (cont.)

Regulation/Authority	Summary
Transportation Equity Act for the 21st Century, 49 U.S.C. §§ 6101 <i>et seq.</i>	Reduces the incidence of damage to underground facilities during excavation through the voluntary adoption and efficient implementation by all States of State one-call notification programs that meet the minimum standards set forth under section 6103.
Watershed Protection and Flood Prevention Act (WPFPA), 16 U.S.C. § 1001 <i>et seq.</i> ; 33 U.S.C. § 701-1; Executive Order 11988	Governs reservoir development and stream modification projects including specific wildlife habitat improvements.
Wild and Scenic Rivers Act (WSRA), 16 U.S.C. § 1271 <i>et seq.</i>	Preserves and protects the free-flowing condition of selected rivers. Established a national Wild and Scenic Rivers System.
Wilderness Act, 16 U.S.C. §§ 1131-1136	Establishes a National Wilderness Preservation System and restricts uses of designated wilderness areas.
Wild Free-Roaming Horses and Burros Act, 16 U.S.C. §§ 1331-1340	Protects from capture, harassment, and death free-roaming horses and burros, and considers them part of the natural system of public lands.

\* From DERP-FUDS Program Manual, July 1996.

EXAMPLES OF REGULATIONS RELATED TO LAND USE CONTROL \* (cont.)

<b>Directive/ Regulation</b>	<b>Title</b>	<b>Contents/Requirement(s)</b>
DOD Directive 4700.4	Natural Resource Management Program	Sets DOD policy for management and protection of natural resources.
DOD Directive 4710.1	Archeological and Historical Resources Management Program	Establishes DOD policies and procedures for protection and management of archeological and historical resources.
DOD Directive 5100.50	Protection and Enhancement of Environmental Quality	Assigns responsibilities and establishes policies and procedures for protection and enhancement of environmental quality in consonance with Federal policy and other DOD issuances.
DOD Directive 6050.1	Environmental Effects in the United States of DOD Actions	Implements Council on Environmental Quality regulations and provides policy and procedures to enable DOD officials to take into account environmental considerations when considering the authorization or approval of major DOD actions in the United States.
Army Regulation (AR) 200-1	Environmental Protection and Enhancement	Prescribes Army policies, responsibilities, and procedures to protect and preserve the quality of the environment. AR 200-1 is currently being revised.
AR 200-2	Environmental Protection and Enhancement	Contains Army procedures for implementing NEPA.

\* From DERP-FUDS Program Manual, July 1996.

**APPENDIX E**  
**CHECKLIST FOR ESTABLISHING SITE-SPECIFIC OBJECTIVES**

Identify the goals of the institutional controls.

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Review the following checklist items to identify possible types of reuse. Place a check mark beside those types of reuse applicable to your installation.

- Type(s) of Reuse Allowed (please be specific, if possible)

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- |                                     |                                      |                                   |
|-------------------------------------|--------------------------------------|-----------------------------------|
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Residential | <input type="checkbox"/> Hospital |
| <input type="checkbox"/> Commercial | <input type="checkbox"/> Housing     | <input type="checkbox"/> Schools  |
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Daycare     |                                   |

- What are the activities that must be restricted?

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- Specific Restrictions

- Restrictions to maintain the integrity of a soil cap

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Other

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Use of soils

Prohibitions against excavation, construction, drilling, or disturbance of the soil

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Restrictions governing depth of excavation

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Other

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Other ICs not directly related to the environmental response

Restrictions preserving historic or cultural areas

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Restrictions protecting wildlife or wetlands

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Restrictions governing access to the property, (e.g., utility maintenance)

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Comments:

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From "A Guide to Establishing Institutional Controls at Closing Military Installations," DoD, Fall 1997.

APPENDIX F  
SUMMARY OF INFORMATION REQUIRED FOR INSTITUTIONAL ANALYSIS

Date: \_\_\_\_\_  
Completed by: \_\_\_\_\_

NAME OF AGENCY:
ORIGIN OF INSTITUTION:
BASIS OF AUTHORITY:
What are the limits of the agency's authority?
How much control is exercised by the agency?
Does the agency have enforcement authority?
SUNSET PROVISIONS:
GEOGRAPHIC JURISDICTION:
MISSION OF THE AGENCY:
Public Safety Function:
Land Use Control Function:
FINANCIAL CAPABILITY:
DESIRE TO PARTICIPATE IN INSTITUTIONAL CONTROL PROGRAM:
CONSTRAINTS TO INSTITUTIONAL EFFECTIVENESS:

Sources of Information: \_\_\_\_\_

APPENDIX G  
SAMPLE DEED LANGUAGE

Reversionary Interest:

From ER 405-1-12, Change 12, 27 Oct 80

PROVIDED, HOWEVER, that if any portion of the above described tracts is used for any purpose other than the purpose designated above then all right, title and interest in and to the portion of the tract so used shall revert to and become the property of the United States at its option and it shall have the immediate right of entry upon said premises, subject to the conditions hereafter set forth.

In the event of a breach of the above condition pertaining to \_\_\_\_\_ use, the Grantor shall, before claiming any forfeiture, give notice in writing of said breach, and of its intention to exercise said option, to the then occupant of the premises. Said occupant shall have a period of sixty (60) days after receipt of said notice to correct and cure said breach. The right of entry of the Grantor shall arise and become exerciseable only after the termination of said sixty (60) day period and failure of the then occupant to correct or cure said breach.

In the event of the failure or refusal of the then occupant of said premises to correct or cure said breach within the time limited, and after exercise by the Grantor of its right of entry, said occupant shall have a reasonable time, not to exceed 120 days, to remove any improvements that have theretofore been placed upon said premises. Such right of removal shall under no circumstances permit such occupant to cause damage to the land involved. In the event that said occupant fails to remove said improvements within the time limited, they shall become the property of the United States.

Failure of the United States to exercise its right of entry upon breach of the above condition pertaining to \_\_\_\_\_ use shall not be construed as a waiver or relinquishment of said right.

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Temporary Environmental Response Easement Language

From DERP-FUDS Manual, July 1996

An assignable easement and right-of-way in, on, over, and across the land described in Schedule A, for a period not to exceed (years) years, beginning with the date of the signing of this instrument, and terminating with the earlier of the completion of the remediation or the filing of a notice of termination in the local land records by the representative of the United States in charge of the (Project Name), for use by the United States, its representatives, agents, contractors, and assigns, as a work area for environmental investigation and response; including the right to store, move, and remove equipment; and supplies; erect and remove temporary structures on the land; investigate and collect samples; (evacuate and remove ordnance and explosive waste, pollutants, hazardous substances, contaminated soils, containerized waste, and replace with uncontaminated soil); (additional description of work); and perform any other such work which may be necessary and incident to the Government's use for the environmental investigation and response on said lands under the Project; subject to existing easements for public roads and highways, public utilities, railroads and pipelines; reserving, however; to the landowner(s), their heirs, executors, administrators, successors, and assigns, all such right, title, interest, and privilege as may be used and enjoyed without interfering with or abridging the rights and easement hereby acquired.

**APPENDIX H**  
**CHECKLIST FOR IMPLEMENTING INSTITUTIONAL CONTROLS**

Review the following checklist items to identify the types of tools that can be used to implement the techniques.

■ Tools: Specific actions that can be used to implement these two techniques

Deed language

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Records and Community Involvement

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Posted notice

Zoning plans

State registries

Fences

Public announcements

Other

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Federal, state, and local laws and regulations

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Statutory authority to enforce RCRA/CERCLA

State and local, general or site specific authorities that can be applied

Property Laws

Permitting Programs

Zoning

Other laws or ordinances

Other

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From "A Guide to Establishing Institutional Controls at Closing Military Installations," DOD, Fall 1997.

APPENDIX I  
CHECKLIST FOR OPERATION AND MAINTENANCE  
OF INSTITUTIONAL CONTROLS

Review the following checklist items to identify responsibilities for maintaining and ensuring the effectiveness of Institutional Controls.

- Statutory authority to enforce under RCRA/CERCLA
- State and local, general or site-specific enforcement authorities that can be applied
  - Property laws
  - Zoning
  - Permitting Programs
  - Other laws or ordinances
- Funding maintenance of the Institutional Controls
- Long term coordination issues
- Inspections

- 
- Remedy-specific environmental inspections (generally part of operation and maintenance of a remedy--for example:)
    - Inspections to ensure integrity of soil cap
    - Other inspections required for operation and maintenance
  - Other Federal, state, and local inspections not directly related to the environmental response
    - Restrictions concerning health
    - Restrictions concerning building standards
    - Restrictions preserving wildlife or wetlands
    - Restrictions governing access to the property (e.g., utility maintenance)
    - Restrictions preserving historic or cultural areas
    - Other

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Comments:

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From "A Guide to Establishing Institutional Controls at Closing Military Installations," DOD, Fall 1997.

**APPENDIX J**  
**CHECKLIST FOR MODIFYING OR TERMINATING INSTITUTIONAL CONTROLS**

Review the following checklist items to identify how to modify or terminate an Institutional Control.

Length of time institutional control is needed

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Legal steps required to remove or modify each Institutional Control

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Organizations which may be involved with modification or termination:

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Federal government

Local court

State government

Landowner

State court

Adjacent landowner

Local government   

Previous landowner

Comments:

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From "A Guide to Establishing Institutional Controls at Closing Military Installations," DOD, Fall 1997.

## GLOSSARY

### Section I Abbreviations

AR	Army Regulation
BMP	Base Master Plan
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
DA	Department of the Army
DA Pam	Department of the Army Pamphlet
DDESB	Department of Defense Explosives Safety Board
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EP	Engineer Pamphlet
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ER	Engineer Regulation
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FUDS	Formerly Used Defense Site
HQDA	Headquarters, Department of the Army
HQUSACE	Headquarters, United States Army Corps of Engineers
IR	Installation Restoration
MACOM	Major Command
MCX	Mandatory Center of Expertise
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSC	Major Subordinate Command
NCP	National Oil and Hazardous Substance Contingency Plan
OE	Ordnance and Explosives
OE MCX	Ordnance and Explosives Mandatory Center of Expertise
PM	Project Manager
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision

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USACE.....United States Army Corps of Engineers  
USAESCH.....U.S. Army Engineering and Support Center, Huntsville  
UXO .....Unexploded Ordnance

## **Section II**

### **Terms**

#### **Active Installations**

Installations under the custody and control of DOD. Includes operating installations, installations in a standby or layaway status, and installations awaiting closure under the Base Realignment and Closure (BRAC) legislation.

#### **Active Range**

A military range that is currently in service and is being regularly used for range activities. (40 CFR 266.201)

#### **Administrative Record**

The body of documents that “forms the basis” for the selection of a particular response at a site. Documents that are included are relevant documents that were relied upon in selecting the response action as well as relevant documents that were considered but were ultimately rejected. (ER 1110-1-8153)

#### **Applicable or Relevant, and Appropriate Requirements (ARARs)**

Applicable requirements are cleanup standards, standards of control, and other substantive environmental protection requirements promulgated under federal or state environmental law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance found at a CERCLA site. Relevant and appropriate requirements are cleanup standards that while not “applicable”, address situations sufficiently similar to those encountered at a CERCLA site that their use is well-suited to the particular site.

#### **Base Realignment and Closure (BRAC)**

Program governing the scheduled closing of Department of Defense sites. (Base Closure and Realignment Act of 1988, Public Law 100-526, 102 Stat. 2623, and the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, 104 Stat. 1808)

### **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)**

CERCLA authorizes federal action to respond to the release or threatened release of hazardous substances into the environment or a release or threat of release of a pollutant or contaminant into the environment that may present an imminent or substantial danger to public health or welfare.

### **Conventional Ordnance and Explosives**

The term “conventional OE” refers to ordnance and explosives (see definition) other than CWM, BWM and nuclear ordnance. (ER 1110-1-8153)

### **Covenant**

A covenant is a promise that certain actions have been taken, will be taken, or may not be taken. Covenants can bind subsequent owners of the land. There are special legal requirements needed to bind subsequent owners. An affirmative covenant is a promise that the owner will do something that the owner might not be obligated to do, such as maintaining a fence on the property that surrounds a landfill. A negative easement is a promise that the owner will not do something that the owner is otherwise free to do, such as restricting the use of groundwater on the land.

### **Defense Environmental Restoration Program (DERP)**

Established in 1984, DERP promotes and coordinates efforts for the evaluation and cleanup of contamination at Department of Defense installations. (10 U.S.C. 2701)

### **Design Center**

A specified USACE field office assigned a singular technical mission that is permanent and USACE-wide in scope. The designated office is to be considered the “lead activity” in a specialized area where capability needs to be concentrated for maximum effectiveness, economy, and efficiency. The OE Design Center (in coordination with the PM) will execute all phases of the OE response project after the approval of the INPR unless the removal action is transferred to an approved district. Only the USAESCH OE Design Center is authorized to execute any phase of a Non-Stockpile CWM response. (ER 1110-1-8153)

### **Districts Approved to Execute OE Removal Actions**

These districts are selected and approved by the MSC Commander with concurrence from the OE MCX, trained, and assigned the mission of conducting OE removal actions. The districts are responsible for final removal action execution. (ER 1110-1-8153)

### **Easement**

An easement allows the holder to use the land of another or to restrict the uses of the land. An easement “appurtenant” provides a specific benefit to a particular piece of land. For example, allowing

a neighbor to walk across your land to get to the beach. The neighbor's land, the holder of the easement, benefits by having beach access through your land. An easement "in gross" benefits an individual or company. For example, allowing the utility company to come on your land to lay a gas line. The utility company, the holder of the easement, benefits by having use of the land to lay the gas line. An affirmative easement allows the holder to use another person's land in a way that, without the easement, would be unlawful - for example, allowing a use that would otherwise be a trespass. A negative easement prohibits a lawful use of land - for example, creating a restriction on the type and amount of development of land.

### **Engineering Evaluation/Cost Analysis (EE/CA)**

An EE/CA is prepared for all non-time-critical removal actions as required by Section 300.415(b)(4)(i) of the NCP. The goals of the EE/CA are to identify the extent of a hazard, to identify the objectives of the removal action, and to analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability.

### **Formerly Used Defense Sites (FUDS)**

FUDS includes those properties previously owned, leased, or otherwise possessed by the U.S. and under the jurisdiction of the Secretary of Defense; or manufacturing facilities for which real property accountability rested with DOD but were operated by contractors (Government owned - contractor operated) and which were later legally disposed of. FUDS is a subprogram of the DERP. Restoration of military land was extended to formerly used sites in 1983 under Public Law 98-212 (DOD Appropriations Act of FY84).

### **Government Control**

Government controls are restrictions that are within the traditional police powers of state and local governments to impose and enforce. Permit programs and planning and zoning limits on land use are examples of government controls.

### **Institutional Controls**

Institutional controls consist of legal, physical, or educational mechanisms that limit the access or use of a property, or warn of the hazard in order to protect property users and the public from existing site contamination that continues to be present at a site during use.

### **Information Repository**

A repository, generally located at libraries or other publicly accessible locations, which contains documents reflecting the on-going environmental restoration activities. This may include the EE/CA, CRP, RAB meeting minutes, public notices, public comments and responses to those comments, etc.

### **Intrusive activity**

An activity which involves or results in the penetration of the ground surface at an area known or suspected to contain OE. Intrusive activities can be of an investigative or removal action nature.

### **Mandatory Center of Expertise (MCX)**

An MCX is a USACE organization that has been approved by HQUSACE as having a unique or exceptional technical capability in a specialized subject area that is critical to other USACE commands. Specific mandatory services to be rendered by an MCX are identified on the MCX's homepage. These services may be reimbursable or centrally funded. The USAESCH is the OE MCX for the USACE. (ER 1110-1-8153)

### **Military Munitions**

All ammunition products and components produced or used by or for the U.S. DOD or the U.S. Armed Services for national defense and security, including military munitions under the control of the DOD, the US Coast Guard, the US DOE, and National Guard personnel. The term military munitions includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries used by DOD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components thereof. However, the term does include non-nuclear components of nuclear devices, managed under DOE's nuclear weapons program after all required sanitization operations under the Atomic Energy Act of 1954, as amended, have been completed. (40 CFR 260.10)

### **National Oil and Hazardous Substance Pollution Contingency Plan (NCP)**

Revised in 1990, the NCP provides the regulatory framework for responses under CERCLA. The NCP designates the Department of Defense as the removal response authority for ordnance and explosives hazards.

### **Non-Time Critical Removal Action (NTCRA)**

NTCRAs are actions initiated in response to a release or threat of a release that poses a risk to human health, its welfare, or the environment. Initiation of removal cleanup actions may be delayed for six months or more.

### **Ordnance and Explosives (OE)**

OE consists of either (1) or (2) below:

(1) Ammunition, ammunition components, chemical or biological warfare materiel or explosives that

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have been abandoned, expelled from demolition pits or burning pads, lost, discarded, buried, or fired. Such ammunition, ammunition components, and explosives are no longer under accountable record control of any DOD organization or activity. (HQDA Policy Memorandum “Explosives Safety Policy for Real Property Containing Conventional OE”)

(2) Explosive Soil. See definition under “Explosive Soil.” (ER 1110-1-8153)

### **Partnering**

A formal process in which two or more organizations come together to work as a team toward a shared goal.

### **Proprietary Control**

A proprietary control is a private contractual mechanism contained in the deed or other document transferring the property. Proprietary controls involve the placement of restrictions on land through the use of easements, covenants, and reversionary interests. Easements, covenants, and reversionary interests are nonpossessory interests. Nonpossessory interests give their holders the right to use or restrict the use of the land, but not to possess it. This is in contrast to possessory controls interests in which the holder may have the right to possess the land. State laws vary on the application and enforcement of such restrictions.

### **Real Property**

Real property consists of land, improvements, structures, and fixtures, and includes bodies of water.

### **Removal Action**

The cleanup or removal of OE from the environment to include the disposal of removed materiel. The term includes, in addition, without being limited to, security fencing or other measures to prevent, minimize, or mitigate damage to the public health or welfare or to the environment. (ER 1110-1-8153)

### **Resource Conservation and Recovery Act (RCRA)**

Enacted in 1976, RCRA promotes the protection of health and the environment. It regulates waste generation, treatment, storage, transportation, and disposal for facilities currently in operation. The OE removal process is affected by RCRA if OE must be disposed off-site.

### **Response Action**

Action taken instead of or in addition to a removal action to prevent or minimize the release of OE so that it does not cause substantial danger to present or future public health or welfare or the environment. (ER 1110-1-8153)

### **Restoration Advisory Board (RAB)**

A forum for discussion and exchange of information between agencies and the affected communities. RABs provide an opportunity for stakeholders to have a voice and actively participate in the review of technical documents, to review restoration progress, and to provide individual advice to decision makers regarding restoration activities. (ER 1110-1-8153)

### **Reversionary Interest**

A reversionary interest places a condition on the transferee's right to own and occupy the land. If the condition is violated, the property is returned to the original owner or the owner's successors. Each owner in the chain of title must comply with the conditions placed on the property. If the condition is violated the property can revert to the original owner, even if there have been several transfers in the chain of title.

### **Siting Restrictions**

Siting restrictions control land use in areas subject to natural hazards, such as earthquakes, fires, or floods. Such restrictions are created through statutory authority to require that states implement and enforce certain land use controls as well as through local ordinances.

### **Stakeholder**

Stakeholders include federal, state, and local officials, community organizations, property owners, and others having a personal interest or involvement, or having a monetary or commercial involvement in the real property which is to undergo an OE response action.

### **Superfund Amendments and Reauthorization (SARA)**

Enacted in 1986, this legislation establishes standards for cleanup activities, requires federal facility compliance with CERCLA, and clarifies public involvement requirements.

### **Unexploded Ordnance (UXO)**

Military munitions that have been primed, fuzed, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material and remain unexploded either by malfunction, design, or any other cause. (40 CFR 266.201)

### **Zoning**

Zoning is a use restriction imposed through the local zoning or land use planning authority. Such restrictions can limit the access and prohibit disturbance of the remedy. Zoning authority does not exist in every jurisdiction.